

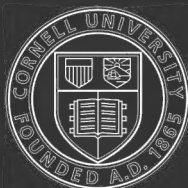


NATURAL HISTORY



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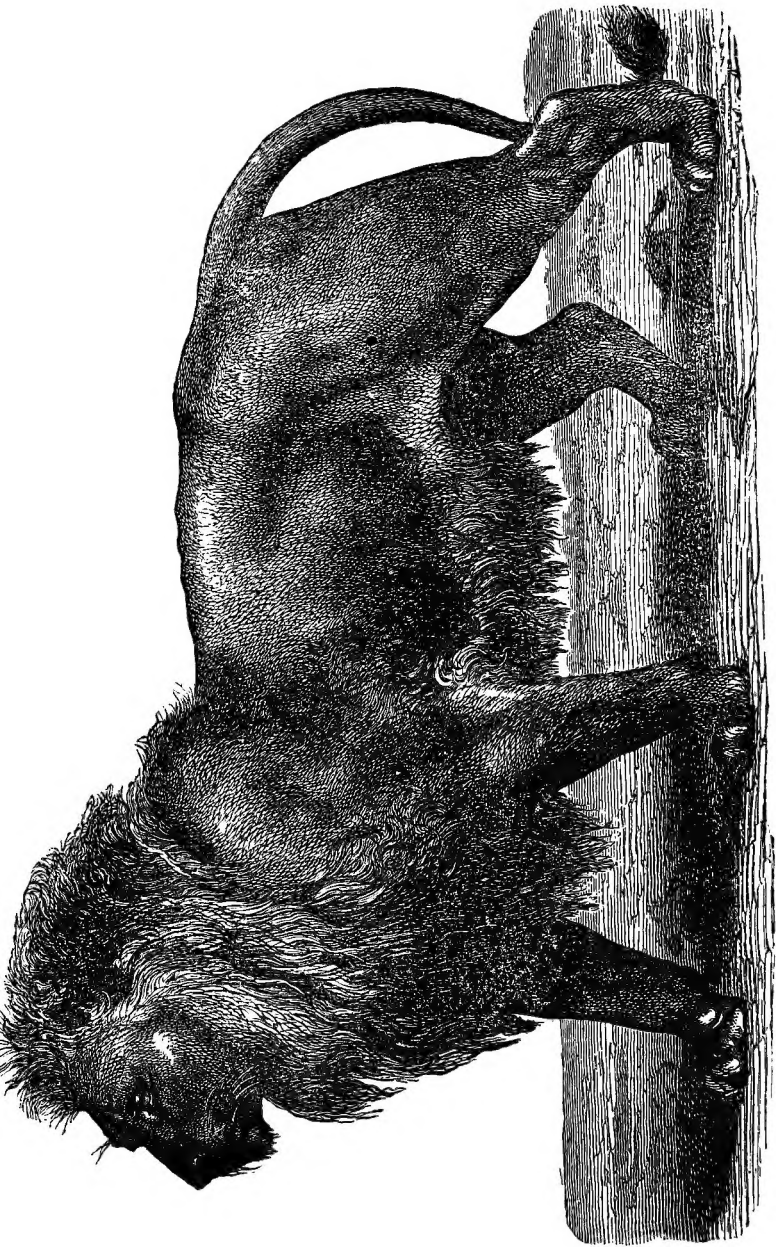




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African Lion.

NEW EDITION.

ILLUSTRATED
NATURAL HISTORY

COMPRISING

DESCRIPTIONS OF ANIMALS, BIRDS, FISHES,
REPTILES, INSECTS, ETC.

WITH

SKETCHES OF THEIR PECULIAR HABITS AND CHARACTERISTICS.

BY THE

REV. J. G. WOOD, M.A.,

(AUTHOR OF "THE ILLUSTRATED NATURAL HISTORY OF MAN."
"INSECTS AT HOME," ETC., ETC.)

AND OTHER

EMINENT NATURALISTS.

Beautifully Illustrated by Three Hundred Fine Engravings.

PHILADELPHIA:
CRAWFORD & CO.,
No. 51 NORTH NINTH STREET.
1883.

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P R E F A C E .

THE study of Animated Nature is indispensable to a proper understanding of the great plan of Creation, the beneficent Author of which has assigned to each creature its separate place, given it specific functions to perform, and endowed it with such faculties as are necessary to the preservation of life and the continuation of its species. The present volume has been compiled with the view of presenting the requisite information in such shape as will make the subject attractive alike to youth or to the mature reader, who might perhaps be deterred from a perusal of more diffuse histories by the prolixity of detail, or the too scientific character of the work. Written in plain and familiar language, and divested of most of the technicalities which are calculated rather to embarrass than to inform the general reader, this unpretending volume is so arranged as to

fill equally well a place in the family library or a vacuum on the school-desk.

The text is illustrated by two hundred and ninety-seven beautiful wood engravings, most of which have been executed in the highest style of art. A well-arranged Index renders the work complete.

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GLIMPSES OF ANIMATED NATURE.

CHAPTER I.

CLASSIFICATION OF ANIMALS.

ANIMATED NATURE is separated into two principal Divisions — *Vertebrates* and *Invertebrates*, or those having a skeleton and red blood, and those having no skeleton and white blood. These are again divided into Classes, of which there are four in the first, and five in the last division. Under *Vertebrates* we have *Mammals* and *Birds*, warm-blooded, with *Reptiles* and *Fishes*, cold-blooded animals; while the *Invertebrates* comprise *Insects*, *Crustacea*, *Molluscs*, *Worms*, and *Zoophytes*.

These Classes are divided into a larger or smaller number of Orders, which are again subdivided into *Genera*, and, still further, into *Species*. But, as it is not the design of this work to enter more deeply into the subdivisions of the animal kingdom than the limited attainments of juvenile students will permit them to follow, the arrangement will be confined to the *Division*, *Class*, *Order*, and *Sub-order*, under which each animal may be ranked, leaving to very profound treatises the task of instructing them how to make a more elaborate and minute classification.

CHAPTER II.

DIVISION I.—VERTEBRATES.

CLASS I.—MAMMALS.

ORDER I.—TWO-HANDED ANIMALS.

THE VERTEBRATES are possessed of an internal skeleton, which is a perfect system of bones, covered with flesh, that serves to support, strengthen, and give form to the whole structure, and which also assists in enclosing the various internal organs, whose action is necessary to the life and vigor of the entire system. Animals of this division have a number of bones, called vertebræ, joined together in the form of a long column, generally known as the backbone, or vertebral column, and sometimes termed the spine, surmounted by a bony case, called the *cranium*, or skull. Through a canal, extending the whole length of the vertebral column, the spinal nerve, or marrow, passes from the skull, and is distributed to all parts of the body. The blood is always *red*, and always (except under extraordinary atmospheric conditions) warmer than the air or water in which the animals of this division reside. The first class under this division is the

Mammals, the females of which produce their young alive, nourish them during infancy with milk from their breasts, and for this reason are termed *mammalia*. Man, monkeys, bats, quadrupeds, and whales, belong to this class.

M A N .

MAN, as the head of the whole animal kingdom, naturally ranks first in the Class *Mammalia*, and we shall therefore now proceed to give a brief description of his organization, and subsequently point out the existing differences between his structure and that of other animals of the same class. The human body

is made up of a head, trunk, and extremities. The head, which includes the skull and the face, is the most important part of the whole structure. Several wide, thin, arched bones, united by sutures, form the large bony cavity called the skull, which contains the brain, and through an opening in its lower part the spinal marrow passes from the brain to the backbone. The organs of hearing, sight, smell, and taste, which make up the general shape, and constitute the features of the countenance, have for their basis a system of bones, not easily described, and united by sutures.

The backbone supports the head, which can make many motions upon it, while it is also the main support of the trunk of the body. It is composed of twenty-four distinct vertebræ, placed one above the other, in the form of a pillar or column. The body of each vertebra is a solid, cylindrical piece of bone, united firmly by strong, elastic cartilages, to those above and below it, while behind, and on each side, are projections of bone, styled processes, so arched over and connected together, as to form a canal from one end of the vertebral column to the other. The spinal nerve or marrow passes through this canal, and by means of holes between the vertebræ, branches of it are distributed to the various parts of the body. The neck has seven vertebræ, the back twelve, and the loins five; known respectively as the cervical, dorsal, and lumbar vertebræ; and they increase in size from above downward—the lumbar vertebræ being as much larger, thicker, and stronger than those of the back, as these surpass in the same respects those of the neck.

On each side of the dorsal vertebræ are affixed twelve ribs, which arching over forwards, are united to the breast-bone by cartilage or gristle, and thus form the cavity of the thorax, or chest, which contains the lungs and heart. A muscular membrane, called the diaphragm or midriff, forms the lower termination of the thoracic cavity, and, extending from the edges of the lower ribs, it stretches across the backbone in such manner as to form a division wall between the chest and the abdomen, immediately below. The abdomen is the cavity usually called the belly, and contains the stomach, liver, spleen, caul, intestines, kidney, etc.

To support all the heavy organs contained within the abdomen, four bones, attached to the lower end of the backbone, spread out into a sort of basin, called the pelvis; while they are still further protected in front and at the sides by skin, fat, and muscles.

The limits of man and other animals are called their extremities. The arm, or upper extremity, is composed of the shoulder having two bones, the collar-bone, and the shoulder-blade, the two latter connecting it with the trunk; the arm, which has only one long, firm bone, extending to the elbow; the forearm, which has two long, parallel bones, reaching from the elbow to the wrist; the wrist, composed of eight small, irregular bones; and the hand, which is made up of four fingers, each having four bones, and the thumb, which has but three. These bones are all so united by ligaments, as to be capable of various degrees of flexibility.

Of similar construction are the lower extremities; the thigh-bone, which is the largest and strongest bone in the body, being connected above with one of the bones of the pelvis, by means of a large, round head, fitting into a socket of corresponding size, and thus forming the hip-joint. The lower end of the thigh-bone, together with the knee-pan and one of the two bones of the leg, contributes to form the knee-joint. The bones of the leg are parallel to each other, and extend from the knee to the ankle, which, like the wrist, is composed of seven small bones, one projecting behind to form the heel. The toes are formed of the same number of bones as the fingers and thumb of the hand, but they are shorter, and do not allow of the same variety of motions.

Man, the only example of the Order *Bimana*, or two-handed animals, holds the highest place in created nature, and is distinguished from all other animals of the Class *Mammalia*, by his power of walking in an erect posture, upon two legs. His bodily, or anatomical structure exhibits, beyond all other animals, a superiority and perfection of workmanship altogether surprising and matchless, and this, with his mental faculties, gives him great advantages over other animals in point of skill and address; though he is inferior to most animals of his size in strength, as

well as in speed, and destitute of natural means of defence, as also of natural covering. Thus it will be seen that man, who, in the social state, is the lord of terrestrial creation, is naturally the most helpless and weakest of all animals.

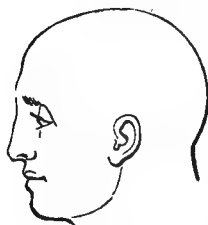
Between man and the species next below him, there exists a wider difference than between any other two species which rank next to each other in the animal kingdom. His hands, although somewhat like those of the monkey, are more delicately and perfectly constructed; the thumb being larger; the fingers, with the exception of the middle finger, possessed of the power of distinct motion; and the nails presenting excellent points of support, which admit of his handling very small substances. His feet are also different, having soles suited only to the purposes of locomotion, and not adapted to handling and grasping objects, as are those of the ape. His head is larger, and his face smaller, in proportion to his size, than those of the monkey; and his ears, eyes, as well as all his senses, are fitted only to the maintenance of an erect posture in walking. His lower extremities being much longer than the upper, he is unable to move about on all fours with facility, and hence is compelled to adopt an upright position. For these reasons man is distinguished as a *bimanous* or two-handed animal, in contradistinction to apes, monkeys, and baboons, which are known as *quadrumanous*, or four-handed animals.

So numerous are the varieties which prevail among the tribes of the human family, that some have been led to conclude that they could not possibly have descended from one common origin. But of this there is no satisfactory proof; and, although we find distinct races of men inhabiting different parts of the world, and having no resemblance in form, features, complexion, and character, yet the cause of these varieties is an unsettled question. They have been attributed to climate, to situation, to manner of life, etc.; but, as none of these circumstances appear sufficient to have produced them, we still, therefore, remain in ignorance on the subject.

If we compare the minute differences of mankind, there is scarce one nation upon the earth that entirely resembles another

and there may be said to be as many different kinds of men as there are countries inhabited. One polished nation does not differ more from another, than the merest savages do from those savages that lie even contiguous to them; and it frequently happens that a river, or a mountain, divides two barbarous tribes that are unlike each other in manners, customs, features, and complexion. But these differences, however perceivable, do not form such distinctions as come within a general picture of the varieties of mankind. Custom, accident, or fashion, may produce considerable alterations in neighboring nations; their being derived from ancestors of a different climate, or complexion, may contribute to make accidental distinctions, which every day grow less; and it may be said, that two neighboring nations, how unlike soever at first, will assimilate by degrees; and, by long continuance, the difference between them will at last become almost imperceptible. It is not, therefore, between contiguous nations we are to look for any strongly marked varieties in the human species: it is by comparing the inhabitants of opposite climates and distant countries; those who live within the polar circle with those beneath the equator; those that live on one side of the globe with those that occupy the other.

Some describe the human family as divided into five varieties or races: the Caucasian, the Mongolian, the Ethiopian, the Malayan, and the American; each of these being subdivided into families, as, for instance, the Caucasian race is subdivided into the Caucasian, the Celtic, the Germanic, the Arabian, the Libyan, the Nilotic, and the Indostanic families.



European.

The Caucasian race are distinguished by the beautiful oval form of their heads, a large and full forehead, regular and distinct features — the face being small and narrow in proportion to the cranium — skin varying from a light rosy white tint to a deep brown; and hair and eyes of various colors. This race is called Caucasian, because its origin is referred to the group of mountains lying between the Black and Caspian

Seas, among which Caucasus has been celebrated. To this day the Georgians and Circassians, who inhabit that region, are considered the most beautiful specimens of the human form. From this race all ancient and modern civilized nations are descended, and they have always been distinguished for superior intellectual and moral qualities.



Ottoman, or Turk.

The Mongolian race is principally found in the eastern part of Asia; and is distinguished by low stature, projecting cheek-bones, a depressed and retreating forehead, faintly marked features, narrow and oblique eyes, broad, flat nose, thick lips, black, straight hair, thin beard, and an olive complexion. In this division are included the Chinese, Japanese, Kalmucks, Mongolians, Finns, Laplanders, Kamschatkadales, and the Esquimaux of Northern America. The individuals of this race are inferior in

moral and intellectual qualities to those of the Caucasian, and have made but little progress in civilization or literary pursuits.



Mongol.

The Ethiopian race is characterized by a narrow and depressed forehead; broad, flat nose; thick lips; projecting jaws; black, crisped, and curled hair or wool; black skin and eyes; long heels; and shrunken shanks. This race is confined to the south of the Atlas chain of mountains, lying between the 20th and 25th degree of north latitude, and supposed almost to divide the continent from east to west. Unendowed with mental faculties or moral perception, the Ethiopian or Negro race has always remained in a barbarous state; and if individuals are compelled for a time to adopt the customs and habits of civilized life, they



Ethiopian.

always return to their original barbaric mode of living, as soon as all restraint upon their actions has been removed.

The Malay race includes nations differing widely in form, features, and character, but too imperfectly known to admit of being accurately described. Some of them, as the inhabitants of New Holland and Van Diemen's Land, resemble very nearly the African race; while others, as those of Malacca, Sumatra, the Sandwich and other islands in the Pacific Ocean, vary in features between the Mongolian and Caucasian races.



Malay.

The American resembles the Mongolian race in many respects; but differs from it in having more

distinct and strongly marked features, and a copper-colored skin. All the native inhabitants of North and South America, with the exception of the Esquimaux, are comprised in this division. They prefer a nomadic life, despise the comforts of civilized existence, except in a few instances, and have made but slight advance in arts and literature. Their highest pitch of refinement was attained in the empires of Mexico and Peru.



American Indian.

Having described the divisions of the human family under the old system of classification, we will proceed to give them according to that of Pickering, now most generally received. He enumerates *eleven distinct races of men*, all of whom



Abyssinian.

he has seen; the Arabian, Abyssinian, Mongolian, Hottentot, Malay, Papuan, Negrillo, Telingan, Ethiopian, Australian, and Negro. He differs from Prichard in several points, but especially in referring the population of America to the Mongolian race, whereas Prichard considers it as entirely separate.

The characteristics and distribution of each race are briefly these. *The Arabian* race extends over the whole of Europe, excepting Lapland, about half of Asia, including the greater part of India, and most of the northern third of Africa. The complexion is light, the lips are thin, the nose is prominent, and the beard thick.

The Abyssinian race occupies a small tract toward the east of Africa, including part of Abyssinia and part of Nubia. The features are like those of Europeans, the complexion is light. The hair crisp, and the beard moderate.

The Mongolian race is remarkable for a feminine aspect in both sexes, so that a stranger is, at a short distance, often perplexed to distinguish a man from a woman; the hair is straight, and the beard is wanting. It extends over the eastern half of Asia, except Corea, over Lapland, and the whole of America, except the western coast by California, and the upper part of South America.



Kamschatkadale.

The Hottentot race occupies the southern extremity of Africa. The complexion is not so dark as that of the Negro, the hair is woolly, and frequently grows in irregular patches, leaving a bald spot in the centre of each patch. This race includes the Bechuanas and the Bosjesmans. The complexion of the Bosjesmans, or Bushmen, is very light, and strongly resembles that of an European, with a few sooty patches irregularly placed.

The Malay race is almost amphibious, and is never found far inland. It is widely spread, and inhabits the centre of Madagascar, the whole of the islands in the Pacific Ocean, except the Fejee, New Hebrides, Solomon's Isles, Papua, and parts of the

Philippines. The parts of America not populated by the Mongolians, are also inhabited by this race. The complexion is a dark copper, the hair straight, and the beard thin



Hottentot.

The Papuan race inhabits about two-thirds of Papua, and the Fejee Islands, where Pickering saw the only individuals of this race who came under his notice. The complexion is dark, the hair bushy, the beard copious. The most remarkable point in this race is the skin, which is astonishingly rough and harsh.

The Negritto race is like the Papuan in color, but the hair is more woolly, the stature is small, and the beard absent. The Negritos inhabit part of Papua, Solomon's Isles, the northern extremities of Luzon and Sumatra, and the New Hebrides.

The Telingan, or Indian race, inhabits the eastern parts of India, especially about Calcutta, several isolated spots in other

parts of India, and the east coast of Madagascar. The complexion is dark (best imitated by a mixture of red and black), the skin is soft, the features are like those of Europeans, hair straight and fine, and the beard copious.

The Ethiopian race is darker than the Telingan, the hair is crisp and fine, skin soft, and the features are more like European features than those of the Negro. This race inhabits the north-eastern portion of Africa, including Southern Egypt, part of Nubia, and part of Abyssinia; a few detached spots towards the north-west, and a large tract of country by Senegambia.

The Australian race inhabits Australia alone. The complexion is like that of the Negro, but the hair is not woolly like that of the Negro.

The Negro race inhabits the central parts of Africa, from the north of Ashanti to a little southward of Zanzibar. The complexion is black, the lips are immensely thick, the nose is flat, and the hair close and curly, strongly resembling wool.

In the distribution of races, it is most interesting to observe the influence of climate and vegetation on the character of man. The vast tract of desert extending from the north-west of Africa, through Arabia, part of India and Tartary, as far as Mongolia, is inhabited by nomadic, or wandering tribes, who depend principally on the milk of their domesticated animals for subsistence.

The interminable and trackless woods of North America develop tribes whose faculties are moulded to the exigencies of their position. To their practised senses the tangled forests are as clear as the highway; the moss on the trees, the sun by day, the stars by night, the rushing of the wind, or the sounds of animal life, are as broad roads and legible signs to them, where we should discover no means to escape from the wilderness of trees. Dependent in a great measure on hunting for their subsistence, their keen eye marks the slightest trace of the expected prey; a drooping leaf, a twisted blade of grass, a bent twig, a ripple in the stream, are all noticed and all understood. Ever eagerly bent on the destruction of inimical tribes, and deeming the number of "scalps" attached to their dress, each designating a slain enemy,

as the best mark of nobility, they learn to track an enemy by his footsteps with unexampled patience and untiring assiduity. No bloodhound ever followed his prey with more certainty than the American Indian when on his "war-path" tracks his retiring enemies, and when near them his approach is silent as the gliding of the serpent, his blow as deadly as its fangs.

The Malay race, whose lot is thrown amid islands and coasts, are as crafty and fierce on the waters as the American Indians in their woods. Accustomed to the water from their earliest infancy, able to swim before they can walk, making playthings of waves that would dash an ordinary swimmer to pieces against the rocks, their existence is almost entirely passed on the water. As the American Indians are slayers and robbers by land, so are the Malays murderers and pirates by sea. They have been known to capture a ship in the midst of a storm by swimming to it and climbing up the cable, and many instances of their crafty exploits in ship-taking are on record. For a full account of their ferocity, cunning, and endurance, the reader is referred to Sir James Brooks's reports on the Borneo pirates.

The Esquimaux, situated among ice and snow, where mercury freezes in the open air, and water becomes ice within a yard of a blazing fire, pass an apparently inactive life. They actually form the ice and snow into warm and comfortable houses; wrapped up in enormous fur garments that almost disguise the human form, they defy the intensity of the frost, and place their highest happiness in the chance possession of a whale, which will furnish them with food, clothing, and light through their long winter.

All these races, although they differ in habits and external appearance, are but varieties of one species. There is not so marked a distinction between the European and Negro, as between the light and active racer and the heavy brewer's horse; yet no one attempts to deny that these are one species. The varieties in man are permanent; that is, the child of Negro parents will be a Negro, and the child of Malay parents will be a Malay, but that is no proof of a distinct species, as precisely the same argument may be used with regard to the horse. The *mind* is the important

part of man, not the body ; and though the outward bodies of men differ, the mind is the same in all, and in all capable of improvement and cultivation.

Those nations which have preserved traditions of past events agree in many points in a very remarkable manner. All have some traditions of a creation, not always of a world, but of that particular part in which they reside. The Fejee islanders believe that one of their gods fished up Fejee from the bottom of the sea, by entangling his fish-hook in a rock, and that the island would have been higher had not the line broken. The fish-hook is still preserved as a proof, but they do not state where the god stood while fishing. A traveller asked one of the priests why the hook, an ordinary tortoise-shell one, did not break ? “ Oh, it was a god’s hook, and could not break.” But why then did the line break ? was the traveller’s very natural response. Whereupon the man, according to the prevailing system of argument in those countries, and perhaps in a few others, threatened to knock him down if he abused the gods any more. Most nations have dim notions of a deluge which overwhelmed the whole world, and from which only a few individuals escaped, by whom the earth was re-peopled. Nearly all believe in a good and an evil power continually at warfare, and that the good will finally subdue the evil. Many savage nations, in consequence, seek to propitiate the evil power with prayers and offerings, feeling sure that the good one will not injure them.

All nations (except one or two, such as the abject Bosjesman, who can form no idea of what he cannot see, and whose answer, when told of a God, is, “ Let me see him”) believe in a future state. Their belief is invariably modified according to their habits. Some of the debased dark races believe that after death they become white men and have plenty of money ; the Mohammedan considers his paradise as an abode of everlasting sensual indulgence ; the savage believes that when he leaves this world he will pass to boundless hunting-fields, where shall be no want of game, and where his arrows shall never miss their mark ; while the Christian knows his heaven to be a place of unspeakable and everlasting happiness, where the power of sin shall have ceased for ever.

CHAPTER III.

DIVISION I.—VERTEBRATES.

CLASS I.—MAMMALS.

ORDER II—FOOT-HANDED AND HAND-WINGED ANIMALS.

THE FOOT-HANDED ANIMALS approach more nearly to man, in their internal structure and external form, than any others. They differ, however, in the size and shape of the head, which is proportionably smaller, narrower, and less elevated; in the conformation of the face, which has a flat, depressed nose, and very prominent jaws and teeth; in the length of the fore-arm; and in the construction of the lower extremities, which are not calculated for the erect posture, and are furnished with hands, instead of feet like those of men. Their structure fits them evidently for climbing, and their usual places of habitation are trees, on the fruits of which they feed. They maintain the erect position with difficulty; it is a constrained one, since it obliges them to straighten the joints of the hip more than is easy or natural, and to rest their weight upon the outer edges of their feet or hind hands. Generally, then, they employ all four of their limbs in walking or running; but their motions, when upon the ground, are very various and irregular.

They form a numerous tribe, and comprehend a great variety of species, known under the name of apes, baboons, monkeys, lemurs, etc. These names are generally employed with little discrimination, but they are intended to point out some general differences of form. Thus, the apes are destitute of a tail; that of the baboons is a very short one; and that of the monkeys is about the length of their bodies. Besides these, which are confined to the old continent, there are those belonging to the new world, which have all long tails; and these are, in many instances, of so much

strength, as to answer in some measure the purpose of a fifth limb, enabling the animal to grasp with it the branches of trees or other objects, to assist in climbing. . These are called prehensile tails. The orang-outan and chimpanzee are the most celebrated of the foot-handed animals, for their similarity in face and form to the human race; whilst many other species, by their elongated snout, depressed forehead, and other particulars, approach more nearly to other quadrupeds.

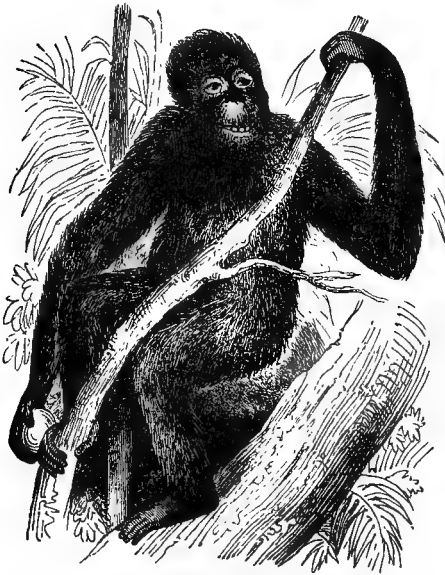
APES.

THE ORANG-OUTAN, or wild man of the woods, found in Borneo and Sumatra, is the largest of all the apes. It possesses immense strength, and is an animal remarkable not only from being extremely rare, but as having, in many respects, a strong resemblance to man. What is technically denominated the cranium is perfectly human in its appearance; the shape of the upper part of the head, the forehead, the eyes (which are dark and full), the eyelashes, and, indeed, everything relating to the eyes and ears, differing in no respect from man. The hair of his head, however, is merely the same which covers his body generally. The nose is very flat, the distance between it and the mouth considerable; the chin, and, in fact, the whole of the lower jaw, is very large, and his teeth, twenty-six in number, are strong. The lower part of his face is what may be termed an ugly or caricature likeness of the human countenance. The position of the scapulæ, or shoulder-blades, the general form of the shoulders and breasts, as well as the figure of the arms, the elbow-joint especially, and the hands, strongly continue the resemblance. The metacarpal, or that part of the hand immediately above the fingers, is somewhat elongated; and, by the thumb being thrown a little higher up, nature seems to have adapted the hand to his mode of life, and given him the power of grasping more effectually the branches of trees.

He is corpulent about the abdomen, or, in common phrase, rather pot-bellied, looking like one of those figures of Bacchus often seen riding on casks: but whether this is his natural appearance when wild, or acquired since his introduction into new society,

and by indulging in a high style of living, it is difficult to determine.

His thighs and legs are short and bandy, the ankle and heel like the human; but the fore part of the foot is composed of toes, as long and as pliable as his fingers, with a thumb a little situated before the inner ankle; this conformation enabling him to hold equally fast with his feet as with his hands. When he stands



The Orang-outan.

erect, he is about five feet high, and can walk, but his natural locomotion, when on a plain surface, is supporting himself along, at every step, by placing the knuckles of his hands upon the ground. All the fingers, both of the hands and feet, have nails exactly like the human race, except the thumb of the foot, which is without any.

When young the Orang-outan is very docile, and has been taught to make its own bed, and to handle a cup and saucer, or a spoon, with tolerable propriety. For the former occupation it proved itself particularly apt, as it not only laid its own bed-clothes smooth and comfortable, but exhibited much ingenuity in stealing blankets from other beds, which it added to its own. The young Orang in the collection of the Zoological Society, London, evinced extreme horror at the sight of a small tortoise, and, when the reptile was introduced into its den,

stood aghast in a most ludicrously terrified attitude, with its eyes intently fixed on the frightful object.

THE CHIMPANZEE is a native of Western Africa, and is tolerably common on the banks of the Gambia and in Congo. Large bands of these formidable apes congregate together and unite in repelling an invader, which they do with such fury and courage, that even the dreaded elephant and lion are driven from their haunts by their united efforts. They live principally on the ground, and, as their name imports, spend much of their time in caves or under rocks. Their height is from four to five feet, but they are said not to reach this growth until nine or ten years of age.



The Chimpanzee.

Several young Chimpanzees have been recently imported into America, and have shown themselves very docile and gentle; but, had they lived, they would probably in a few years have become fierce and obstinate, as apes almost invariably are when they reach their full growth.

THE LONG-ARMED GIBBON is a very extraordinary and remarkable ape. It is of different sizes, being from two to four feet high. It walks erect, is without a tail, has a face resembling that of a man, with a circle of bushy hair all around the visage; its eyes are large and sunk in its head; its face tanned, and its ears

exactly proportioned. But that in which it chiefly differs from all others of the monkey tribe, is the extraordinary length of its



The Long-Armed
Gibbon.

arms, which, when the animal stands erect, are long enough to reach the ground; so that it can walk upon all fours and yet keep its erect



Hand of Long-Armed Gibbon.

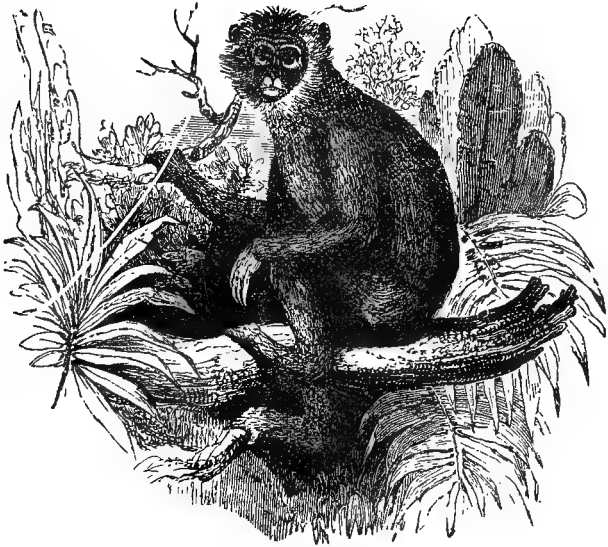
posture at the same time. This animal, next to the Orang-outan and the Chimpanzee, most nearly resembles mankind, not only in form, but in gentle manners and tractable disposition. It is a native of the East Indies, and particularly found along the coast of Coromandel.

THE KAHAU, or *Proboscis Monkey*, is a native of Borneo. It derives its name from the cry it utters, which is a repetition of the word "Kahau." It is remarkable for the extraordinary size and shape of its nose, and the natives relate that while leaping it holds that organ with its paws, apparently to guard it against the branches. The length of its head and body is two feet.



Face of the Proboscis
Monkey.

THE SYLVANUS, or *Pigmy Ape*, has a flattish face. There is a great resemblance in the ears to those of the human species. So diminutive is its size, that it is only about as large as a common cat. Above, the color is of an olive brown; beneath, yellowish; the nails are flat; and what is common to many of the ape species, the buttocks are bare; it sits in an upright posture; the face is almost naked, and is long and wrinkled, giving it a most antiquated appearance; the eyes are very lively, and are round and reddish; it has no tail, but in the place, a small protuberance of skin, consisting of five or six lines in length. They are natives of Africa, and abound in Ethiopia.



The Pigmy Ape.

BABOONS.

THE BABOON.—Descending from the more perfect of the monkey kinds, we come to the baboon and its varieties, a large, fierce, and formidable race, that mixing the figure of the man and the quadruped in their conformation, seems to possess only the defects of both; the petulance of the one, and the ferocity of the other. These animals have a short tail; a prominent face; with canine teeth, larger than those of men, and callosities on the rump.

THE MANDRILL, which also bears the name of the Ribbed-nosed Baboon, is an ugly, disgusting animal. It is found on the Gold Coast, and in other southern provinces of Africa, where the Negroes call it *Boggo*, and the Europeans *Mandrill*. This animal is the largest of the Baboon kind, and is equally remarkable for its variety of color, its singularity of appearance, its immense strength, and its unconquerable savageness. “Under its project-

ing forehead," says Mr. Bingley, "are two small and vivid eyes, situated so near to each other that their position alone gives to the physiognomy an air of ferocity. An enormous muzzle, indicative of the most brutal passions, terminates in a broad and rounded extremity of a fiery red color, from which continually oozes a mucous humor. The cheeks, greatly swollen and deeply furrowed, are naked, and of a deep blue color. A narrow blood-colored ridge extends down the middle of the face, and termi



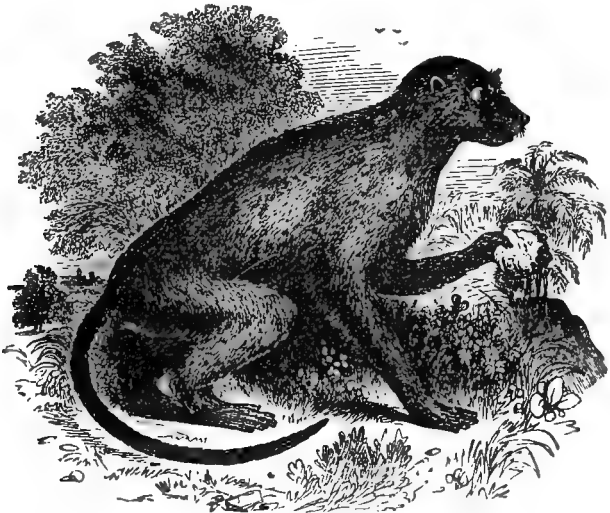
The Mandrill.

nates in the nose." Round the neck the hair is very long. On the sides of the head it joins that at the top, and the whole terminates in a somewhat pointed form. Each hair of the body is annulated with black and yellow; so that the whole fur has a greenish brown hue.

When standing upright, the Mandrill is in height from three feet and a half to five feet. It is to be found on the Gold Coast, in several other parts of Africa, and also in the East Indies and the Indian Archipelago. Its voice bears some resemblance to the roaring of a lion. No art or kindness can in the least

subdue its brutal propensities; and its great strength renders it an object of perpetual dread to its keepers. Yet it is not, strictly speaking, a carnivorous animal; for, though it will eat meat that has been cooked, its usual food is fruits and nuts.

THE DOG-FACED BABOON is between four and five feet high, inhabits various parts of Africa and Asia, and is distinguished by a longer tail than the rest of its kind; in this respect it seems to bear some affinity to the Monkey, and has been classed under that denomination by several naturalists. Its head is large,



The Dog-Faced Baboon.

muzzle long and thick, eyes small, face naked, and of an olive color; the hair on its forehead is separated in the middle, and hangs down on each side of the face; from thence down its back as far as its waist it is long and shaggy, of a bluish gray color, freckled with dark spots; the hair on the lower part of the body is short; and its buttocks are bare and red. It lives in troops, commits great depredations in gardens and cultivated grounds, and is exceedingly strong, vicious, and impudent.

THE URSINE BABOON is not unlike the last, but rather less. Its nose is long, head large, ears short, forehead high and prominent; terminating in a ridge; the body thick and strong, covered with long dusky hair, which gives it the appearance of a young bear, its tail is half the length of its body; its buttocks red. This animal is very numerous about the Cape of Good Hope. Troops of them make expeditions for the sake of plunder, in which, to prevent being surprised, they place a sentinel which, upon the sight of a man, gives a loud yell, when the whole troop retreats with the greatest precipitation; the young ones leaping on the backs of their parents, and clinging closely to them. When the Ursine Baboon sees a single person sitting and eating in the fields, it will steal behind him, snatch his food from him, retire to a little distance, and begin to devour it; now and then holding it out in its paws towards the loser, with many laughable grimaces, as if offering to restore the prize. It may be tamed, and will then guard its master's property with all the sagacity and fidelity of a dog.

THE MAIMON, which is a native of the banks of the Ganges, has pouches on each side of its cheeks, and callosities on its posteriors; its tail is naked, curled up, and about the length of five or six inches; the canine teeth are not much longer in proportion than those of men; the snout is very broad; the orbits of the eyes very acute above; the face, ears, hands, and feet are naked.

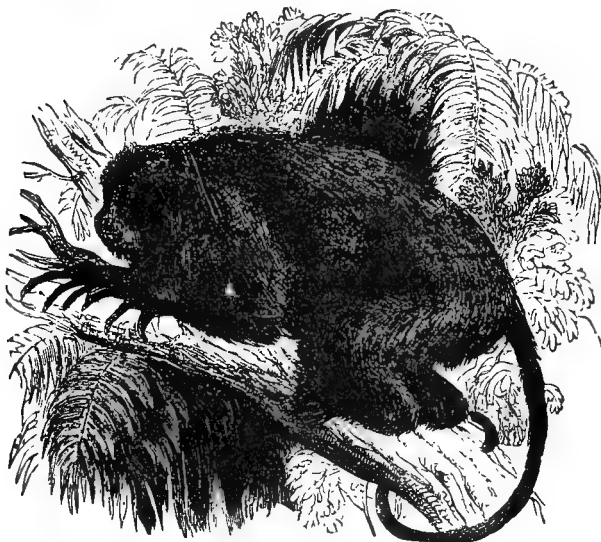


The Maimon.

MONKEYS.

THE COAITA has received a variety of names. It is called the paniscus, the four-fingered, and the spider-monkey. It has received this last name on account of the great length of its arms and legs, to which its diminutive body bears so small a proportion. The length of this animal is about eighteen inches, exclusive of the tail, which measures nearly two feet, and therefore longer than

its whole body. The face is naked, of a copper color, long and flat. The eyes are sunk in the head, and the ears are like those of the human form. The body is very slender, and universally covered with long black hair. Other monkeys have thumbs; this species has no thumbs, only four fingers on each hand, and hence called the four-fingered monkey. What is very singular, while it has only four fingers on its hands, it has five toes upon its feet. As to its long tail, it is almost as useful as a hand; being *prehensile*, that is, having the power of laying hold on objects. This very singular species is found in great numbers in Carthagena, Guiana, Brazil, and Peru.



The Howler.

THE HOWLING MONKEYS are larger and more clumsy than the Spider Monkeys, and are chiefly remarkable for the peculiarity from which they derive their name. These animals possess an enlargement in the throat, which renders their cry exceedingly loud and mournful. They howl in concert, principally at the rising and setting of the sun; one monkey begins the cry, which

is gradually taken up by the rest, precisely as may be observed in a colony of rooks. They are in great request among the natives as articles of food, their slow habits rendering them an easy prey. The Ursine Howler, or Araguato, is common in Brazil, where forty or fifty have been observed on one tree. They generally travel in files, an old monkey taking the lead, and the others following in due order. They feed principally on leaves and fruit; the tail is prehensile, like that of the Spider Monkeys.



The Red Monkey.

THE PATAS, or *Red Monkey* (*simia rubra*), is of a reddish fawn color, rather lively in the upper parts of the body, and whitish below. It has a black band over the eyes, sometimes surmounted with white. It is a native of Senegal, Congo, and other hot parts of Africa. This species is tailed and bearded. The crown, the back, and the tail, are of a deep red color. There are two other varieties; the first is provided with a yellow beard, while the band over the eye is black. The second is furnished with a

white beard, and the band over the eye is also white. The height of the red monkey is from eighteen inches to two feet. The red monkey is a pretty animal. We even see the sovereignty of the Deity displayed in the comparative beauty given to some species of the family of monkeys, and the disgusting deformity given to others. But though the red monkey has outward beauty, it is in a proportionate degree defective in agreeable disposition. It is violent, capricious, mischievous, and very little susceptible of attachment.

THE MARMOSET is a most interesting little creature. It is exceedingly sensitive to cold, and when in the United States is usually occupied in nestling among the materials for its bed, which it heaps up in one corner, and out of which it seldom emerges entirely. It will eat almost any article of food, but is especially fond of insects, which it dispatches in a very adroit manner. It will also eat fruits, especially those of its native country. Its fondness for insects is carried so far, that it has been known to pinch out the figures of beetles in an entomological work, and swallow them.

THE COLLARED TEE TEE, or *White-throated Squirrel Monkey*, is found to the east of the Orinoco. It lives on small birds, insects, and fruits. Its habits are, apparently, mild and inoffensive, but its acts belie its looks, for when a small bird is presented to it, it springs upon its prey like a cat and speedily devours it.

LEMURS.

THE LEMURS derive their name from their nocturnal habits, and their noiseless movements. The Ruffled Lemur is a native of Madagascar. It lives in the depths of the forests, and only moves by night, the entire day being spent in sleep. Its food consists of fruits, insects, and small birds, which latter it takes while they are sleeping. This is the largest of the lemurs, being rather larger than a cat.

THE SLENDER LORIS is a native of India, Ceylon, etc. It, like the Lemur, seldom moves by day, but prowls about at night in search of food. No sooner does it espy a sleeping bird, than

it slowly advances until within reach; then putting forward its paw with a motion slow and imperceptible as the movement of the shadow on the dial, it gradually places its fingers over the devoted bird; then, with a movement swifter than the eye can follow, it seizes its startled prey.



The Slender Loris.

HAND-WINGED ANIMALS.

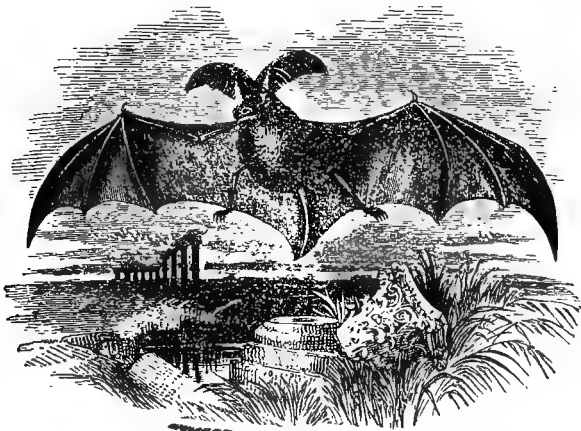
BATS.—These are the only types of this family, and were arranged by Linnæus with man and the monkeys. They are sufficiently distinguished, however, by their wings. These are formed of a thin fold of

skin, which extends between the two limbs of the same side, and is likewise stretched across the claws of the fore feet, which are very long and slender, and serve to keep the membrane extended like the sticks of an umbrella. By means of this apparatus, many of them are enabled to fly with a force and rapidity equal to that of birds; but, in others, it answers only the purpose of a parachute to break their fall from lofty places, or to enable them to perform great leaps in their passage from tree to tree. They are principally nocturnal animals, seeking their prey (which consists of insects, small quadrupeds or birds, and flesh of any kind) in the twilight, and retiring during the day to dark and hidden recesses, where they remain suspended by their claws, till the return of night.

They possess the singular faculty of directing their flight with great accuracy and precision, without the assistance of the sense of sight, and even after their eyes have been destroyed. It has been found that, after the complete removal of the eyeball, bats are able to fly about in a room without touching the walls, apparently with as much ease and security as before. What is still more remarkable, when several willow rods are placed six inches distant from each other, so as to form a sort of grating, the bats, after the destruction of their eyes, are able to pass backward and forward through the spaces without ever coming in contact with

the rods. It is difficult to give any satisfactory account of this phenomenon, and yet the experiments from which the knowledge of it has been derived, are well authenticated, and have been frequently repeated. It has been attributed to the great extent and uncommon delicacy of the membrane constituting the wings, and of that lining the ear, which have been supposed to render the animal capable of judging, from the impressions made upon it by the air, of the relative distances and positions of external objects.

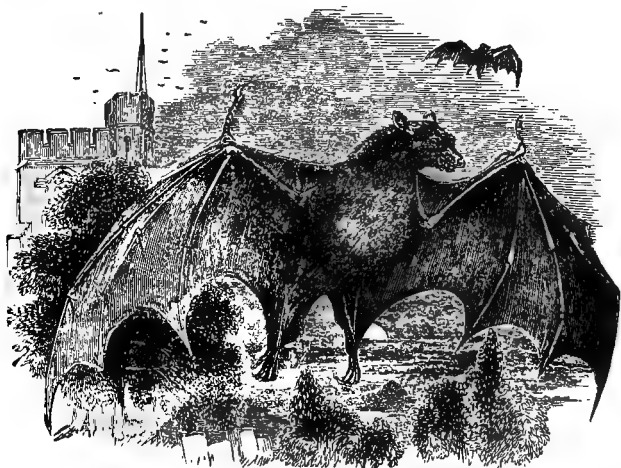
THE COMMON BAT.—The following *characters* belong to the various species of bats. The skin of the body is laterally



The Common Bat.

prolonged to the extremities of the toes; the toes, or fingers of the fore-limbs, much longer than those of the hinder, united by broad membranes, usually without claws; the thumb separated, but always very short in proportion to the other toes, except in the genus *pteropus*, and always armed with a strong and very sharp claw. The toes of the hind feet are united, very short, and provided with very strong nails. The cutting-teeth are sometimes wanting in one of the jaws, and vary in number from two to six. The canine-teeth are very strong, and the grinders in most in-

stances have sharp protuberances. The membrane with which they fly, and which resembles a wing, is naked. There is either a tail, or the rudiments of one. The ears are almost always large in proportion to the size of the animal. The wings are a most beautiful and singular construction. These consist of an extremely thin, light, and delicately-formed membrane, surpassing the finest texture of silk, extending from one shoulder entirely round the body to the other. This connects the fore and hind legs, and is capable, from its firmness and pliability, of being contracted at pleasure into innumerable folds, so as to occupy little room, and give the animal no inconvenience when at rest, and also capable of being stretched to a wide extent for occasional flight. The eyes are deeply seated in the head, and scarcely visible.



The Vampyre Bat.

Bats retire upon the approach of cold weather in the autumn, and pass the winter in a dormant state. They frequently suspend themselves together in large clusters, that by their warmth they may reciprocally assist each other in resisting the effects of the cold. During this period, the powers of life seem to be almost

extinct; the temperature of the animal is much lowered, and he becomes lean and exhausted, so that he awakens in the spring in a state of great weakness and emaciation, although in the autumn he may have been very fat.

THE VAMPIRE BAT is from five inches to a foot in length, and has membranous wings extending from four to six feet. It inhabits Africa and Asia, but is found most abundantly in the East Indian islands. It is very gregarious, and is found in immense flocks. Five hundred have been counted hanging on a single tree. It does not confine itself to animal food, but subsists also upon fruits and vegetables, and is the cause of great injury to the produce of the countries it inhabits. It has been supposed to suck the blood of persons lying asleep, by making an orifice in some exposed vein, which it does so easily as not to awaken the sleeper, to the soundness of whose slumbers it contributes by fanning him gently with its wings. Hence this animal has received the name Vampire, and is thought to have given origin to the ancient fable of the Harpies. It is said to be excellent food.



The Spectre Bat.

THE SPECTRE BAT is a species very similar in its habits to the one just described. It is a smaller animal, not exceeding seven inches in the length of its body, and two feet in the extent of the membrane of its wings. It is an inhabitant of South America and New Holland, and exists in immense numbers. It has the same propensity for drawing blood as the Vampyre, and is said to cause great injury and destruction among cattle by this means. In New Holland, twenty thousand have been computed to be seen within the compass of a mile. It is of a mild disposition, and is easily tamed and domesticated.

CHAPTER IV

DIVISION I.—VERTEBRATES.

CLASS I.—MAMMALS.

ORDER III.—QUADRUPEDS.

I. CLAWED QUADRUPEDS.

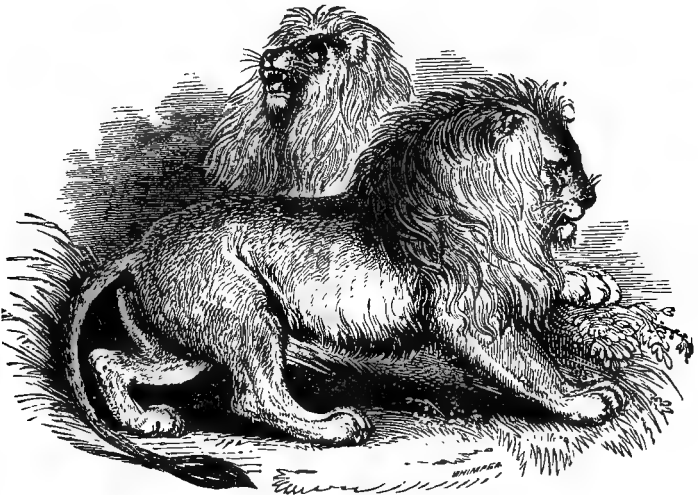
THIS order includes a great number, and a great variety of animals, which, with a few exceptions, are furnished with the three kinds of teeth, differing more or less in shape from those of man and the monkeys, to adapt them to the mastication of animal food, upon which they wholly, or in part, subsist. The animals of this Order are subdivided into Quadrupeds with claws, and Quadrupeds with hoofs; and under these again we have still other subdivisions; which will be indicated in their proper order.

I. Carnivorous Quadrupeds.

THE CAT TRIBE.

THE LION is entitled to the first place among wild beasts His figure is striking, his look confident and bold, his gait proud,

and his voice terrible. His stature is not overgrown, like that of the elephant, or rhinoceros; nor is his shape clumsy, like that of the hippopotamus, or the ox. It is compact, well proportioned, and sizeable: a perfect model of strength joined with agility. It is muscular and bold, neither charged with fat nor unnecessary flesh. It is sufficient but to see him in order to be assured of his superior force. His large head surrounded with a dreadful mane; all those muscles that appear under the skin swelling with the



Lion.

slightest exertions; and the great breadth of his paws, with the thickness of his limbs, plainly evince that no other animal in the forest is capable of opposing him. He has a very broad face, that, as some have imagined, resembles the human. It is surrounded with long hair, which gives it a very majestic air. The top of the head, the temples, the cheeks, the under-jaw, the neck, the breast, the shoulder, the hinder part of the legs, and the belly, are furnished with it, while all the rest of the body is covered with a very short hair of a tawny color.

The length of the hair in many parts, and the shortness of

it in others, serves a good deal to disguise this animal's real figure. The breast appears very broad, but in reality is as narrow and contracted in proportion as that of the generality of dogs and horses. For the same reason, the tail seems to be of an equal thickness from one end to the other, on account of the inequality of the hair with which it is encompassed; it being shorter near the insertion where the flesh and bones are large, and growing longer in proportion as its real thickness lessens towards the point, where it ends in a tuft. The hair about the neck and the breast is not different from that on the rest of the body, except in the length of it; nor is each hair pointed, as in most other animals, but of an equal thickness from one end to the other. The neck is very strong, but, though very short and muscular, it has as many bones as the camel or the horse. The tongue is rough, and beset with prickles as hard as a cat's claws; these have the grain turned backwards; so that it is probable a lion, if it should attempt to lick a man's hand, as we are told it sometimes does, would tear off the skin. The eyes are always bright and fiery; nor even in death does this terrible look forsake them. In short, the structure of the paws, teeth, eyes, and tongue, are the same as in a cat; and also in the inward part these two animals so nearly resemble each other, that the anatomist's chief distinction arises merely from the size.

In this animal, all the passions, even of the most gentle kind, are in excess, but particularly the attachment of the female to her young. The lioness, though naturally less strong, less courageous, and less mischievous than the lion, becomes terrible when she has got young ones to provide for. She then makes her incursions with even more intrepidity than the lion himself; she throws herself indiscriminately among men and other animals; destroys without distinction; loads herself with the spoil, and brings it home reeking to her cubs, whom she accustoms betimes to cruelty and slaughter. She usually brings forth from two to four cubs at a time, in the most retired and inaccessible places; and when she fears to have her retreat discovered, often hides her tracks, by running back over her ground, or by brushing them out with

her tail She sometimes, also, when her apprehensions are great, transports them from one place to another; and, if obstructed, defends them with determined courage, and fights to the last. The cubs are beautiful, playful little things, are slightly striped, and have no mane until they are about two years old.



Lioness.

The lion is chiefly an inhabitant of the torrid zone; and is always most formidable there: nevertheless, he can subsist in more temperate climates; and there was a time when even the southern parts of Europe were infested by him. At present, he is only found in Africa and the East Indies; in some of which countries he grows to an enormous height.

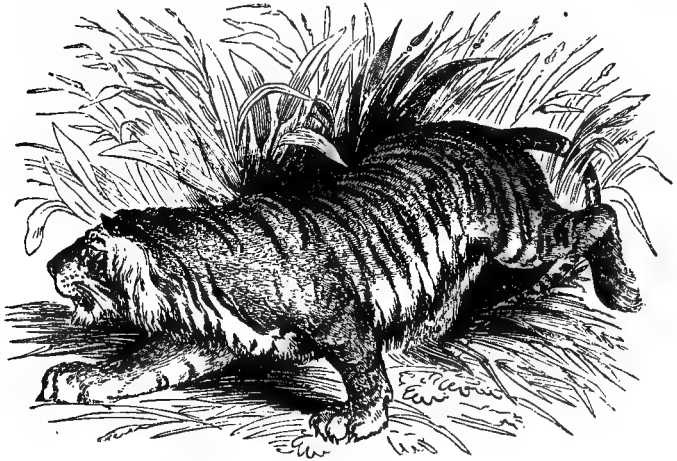
The opinion that lions will not touch a dead animal is erroneous; as they were frequently shot by Mr. Cumming while devouring gnus, etc., that had fallen by his rifle. Those lions who have once tasted human flesh are generally the most to be dreaded, as they will even venture to spring in among a company of men, and seize their victim. These lions are called man-eaters. During

the latter part of Cumming's residence in South Africa a dreadful instance of their ferocity occurred. While the hunting party was encamped for the night in the territory of the Balakahari, a lion, taking advantage of the stormy night, suddenly sprang upon two men, Hendrick, the driver, and Ruyter, the Bosjesman tracker, who were wrapped in the same blanket, by the fire. It seized Hendrick by the neck, and dragged him into the bushes, in spite of the blows which another man gave it with a burning brand, leaving Ruyter unhurt except by a few scratches with its claws. Next morning it was shot by Mr. Cumming, who placed its skin in his magnificent collection, where Ruyter points it out with great glee.

THE TIGER is in length about nine feet, its height four or five, its tail of the same length, making, from the nose to the tip of the tail, fourteen feet. The chief color of its body is orange yellow. White prevails nearly over the face, throat, and belly; and the whole is traversed or crossed by numerous long black stripes. This animal is a native of India, being found in China, Chinese Tartary, but chiefly in the hot climates of India, and the Indian Islands. It has a preference for hilly and woody districts and it lurks in jungles and thickets, from which it rushes with dreadful impetuosity, attacking flocks and herds, by no means terrified at the sight of man, and even engaging with the lion in such fierce encounters that the combatants have been found to fall together. Its thirst for blood is extraordinary and appalling. The tiger plunges his head into the body of his victim, and continues to suck the blood until the sources are exhausted. His strength is so prodigious that it is said he can drag along a dead buffalo. The roar of the tiger is tremendous. It is at first deep, slow, and melancholy; then it becomes more acute, and finishes in a dreadful cry. When robbed of her young, the rage of the tigress knows no bounds; no danger can terrify it, and she will pursue the plunderers to the sea-shore or the gate of the city. When she finds her offspring irrecoverably lost, she expresses her grief and indignation by the most fearful howlings.

The chase of the Tiger is among the most exciting and

favorite sports in India. A number of hunters assemble, mounted on elephants trained to the sport, and carry with them a supply of loaded rifles in their howdahs, or carriages mounted on the elephants' backs. Thus armed, they proceed to the spot where a tiger has been seen. The animal is usually found hidden in the long grass or jungle, which is frequently eight or more feet in height,

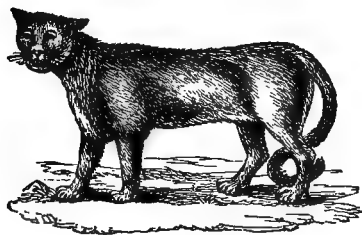


Tiger.

and when roused, he endeavors to creep away under the grass. The movement of the leaves betrays him, and he is checked by a rifle ball aimed at him through the jungle. Finding that he cannot escape without being seen, he turns round, and springs at the nearest elephant, endeavoring to clamber up it, and attack the party in the howdah. This is the most dangerous part of the proceedings, as many elephants will turn round and run away, regardless of the efforts of their drivers to make them face the tiger. Should, however, the elephant stand firm, a well-directed ball checks the tiger in his spring, and he then endeavors again to escape, but a volley of rifle balls from the backs of the other elephants, who by this time have come up, lays the savage animal prostrate, and in a very short time his skin decorates the successful marksman's how-

dah. These hunts are not carried on without considerable danger, as in some cases the tiger has succeeded in reaching the howdah, and more than one hunter has been known to overbalance himself in his anxiety to get a shot at his game, and has fallen into the very claws of the enraged brute. Once a wounded tiger sprang at a badly trained elephant, who immediately turned round and made off. The tiger succeeded in reaching the elephant's tail, which it mangled dreadfully, but could climb no higher, partly on account of its wounds, and partly through the exertions of a native, who kept it back with a spear. The tiger hung in this way for the greater part of a mile, when another hunter succeeded in overtaking the terrified elephant, and with a single ball freed the poor animal from its tormentor.

THE COUGAR is extremely common in South America; and, where the towns border upon the forest, these animals make frequent incursions by night



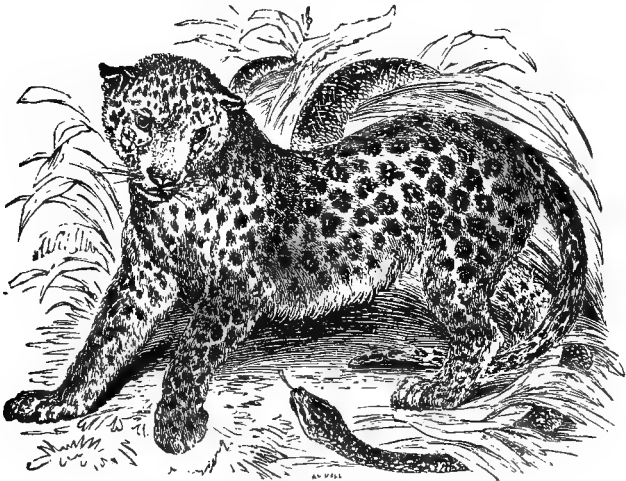
Cougar.

into the midst of the streets, carrying off fowls, dogs, and other domestic creatures. They are, however, but weak and contemptible, being found unable to cope with a single man. The Negroes and Indians are very dexterous

in encountering them; and some, even for the sake of their skins, seek them in their retreats. The arms in this combat, seemingly so dangerous, are only a lance of two or three yards long, made of heavy wood, with the point hardened in the fire; and a kind of scymetar, of about three quarters of a yard in length. Thus armed, they wait till the cougar makes an assault against the left hand, which holds the lance, and is wrapped up in a short cloak of baize. Sometimes the animal, aware of the danger, seems to decline the combat; but then its antagonist provokes it with a slight touch of the lance, in order, while he is defending himself, to strike a sure blow. As soon, therefore, as the creature feels the

lance, it grasps it with one of its paws, and with the other strikes at the arm which holds it, when the person nimbly aims a blow with his scymetar, which he kept concealed, with the other hand, and hamstring the creature, which immediately draws back enraged, but instantly returns to the charge. Receiving another stroke, however, it is totally deprived of the power of motion; and the combatant, killing it at his leisure, strips the skin, cuts off the head, and returns to his companions, displaying these as the trophies of his victory.

THE LEOPARD, or PANTHER, is smaller than the tiger, and is an inhabitant of Africa, India, and the Indian Islands. A black variety inhabits Java, and is not uncommon there. There is great liveliness in its eyes, which are continually in motion. The feet are large; the fore ones having five toes, and the hind but four. It can draw back and push out its dreadful claws at pleasure. It has the power of opening and closing the toes of its feet like the



Leopard.

human hand, and thus becomes dreadfully formidable to the creatures which it attacks. It is peculiarly fierce and savage; all ani-

mals, not even man excepted, it attacks indiscriminately, and it is rarely capable of being tamed. It watches long and patiently for its prey, and will spring or leap upon them from a considerable distance, so far as seventeen feet.

Nothing can be more beautiful than the elegant and active manner in which the leopards sport among the branches of the trees; at one time they will bound from branch to branch with such rapidity that the eye can scarcely follow them; then, as if tired, they will suddenly stretch themselves along a branch, so as to be hardly distinguishable from the bark, but start up again on the slightest provocation, and again resume their graceful antics. When tamed, it expresses great fondness for its keeper, and will play with him like a cat.

THE OUNCE, a native of India, and frequently confounded with the leopard, is, however, much smaller, being not, at most, above three feet and a half long; however, its hair is much longer than that of the leopard, and its tail still more so. The leopard of four or five feet long, has a tail but of two feet, or two feet and a half. The ounce, which is but about three feet, has a tail often longer than the rest of its body. The color of the ounce is also apparently different, being rather more inclining to a cream-color, which is deeper on the back, and whiter towards the belly. The hair on the back is an inch and a half long; and that on the belly two inches and a half, which is much longer than that of the leopard. Its spots are disposed pretty much in the same manner as the large leopard, except that on the haunches it is rather marked with stripes than with spots.

THE JAGUAR inhabits America. It is larger and more powerful than the leopard, which it resembles in color, but has a black streak across the chest, and a black spot in the centre of the rosettes. It is fond of climbing trees, and finds little difficulty in ascending, even when the trunk is smooth and destitute of branches. It chases monkeys successfully, and is said to watch for turtles on the beach, and to scoop out their flesh by turning them on their backs and inserting its paws between the shells. It often makes fearful havoc among the sheep-folds, and is said to depart so far

from the usual habits of the Felidæ, as to enter the water after fish, and to capture them in shallow places. There have been instances of the domestic cat acting in the same manner.

THE PUMA inhabits the whole of America, where it is held in much dread by the natives. Its color is an uniform grey, fading into white on the under parts of its body, and this similarity of color is the reason that the name "concolor" has been given to it. It lives much on trees, and usually lies along the branches, where its uniform dusky fur renders it so like the bark that it can scarcely be distinguished from the branch. This habit it preserves when in captivity, and many persons pass its den in the London Zoological Gardens, fancying it empty, while the puma is lying along its shelf unobserved.

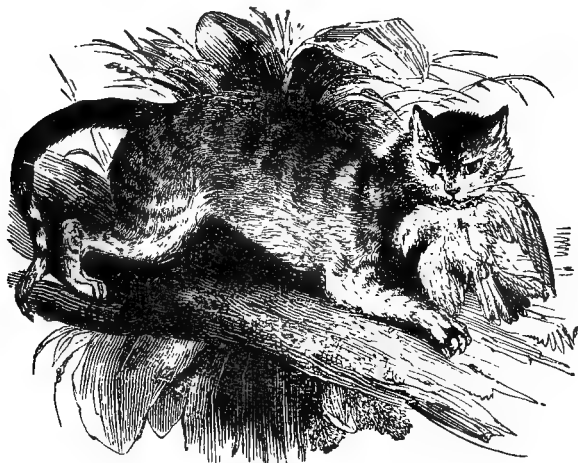
Mr. Eaton Stone, the celebrated equestrian who has travelled for many years in the wilder parts of America, says that the puma is accustomed to follow men by scent, and to track them on their journey, waiting for an opportunity to spring upon them unobserved. If the traveller keeps his eye on the animal it is perfectly harmless, but it will wait for the moment when his eye is withdrawn to spring upon him.

THE OCELOT is the fiercest, and, for its size, one of the most destructive animals in the world. It is a native of South America, and by no means capable of the same education as the ounce, which it more approaches in size than in disposition. Two of these were carried to England from Carthagena, and having been taken from the dam when very young were afterwards suckled by a bitch. But, before they were three months old, they had strength and ingratitude enough to kill and devour their nurse. Their succeeding fierceness and malignity seemed to correspond with their first efforts; for no arts could tame or soften their natures; and while they continued in their cages, they still testified an unceasing disposition for slaughter. When their food was given them, the male always served himself before the female would venture to touch a bit; and it was not till he was satisfied that the other began.

The Ocelot is about two feet and a half in length, from the nose to the insertion of the tail. It is extremely like a cat, except

that it is larger and slenderer, that its colors are more beautiful, and its tail rather shorter. The fur is of a reddish color, the whole beautified with black spots, and streaks of different figures. They are long on the back, and round on the belly and paws. On the ears are black stripes, which run across; but, in other respects, they entirely resemble those of a cat. These colors, however, which naturalists have taken great pains minutely to describe, are by no means permanent, being differently disposed in different animals of the same species.

THE CAT is a quadruped with which we are all familiar. Though in a tame and domesticated state it is most sociable, useful, and harmless, yet the wild animal is as furious as the tiger, and bloodthirsty as the hyena. In all quarters of the globe it is found in a wild and unreclaimed state. Though the domestic varieties are exceedingly numerous, there is no doubt that they have all origi-



Wild Cat.

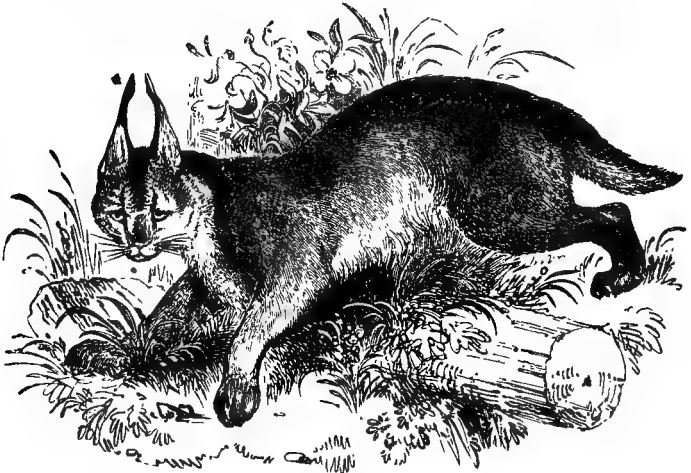
nated in that species which roams in woods and forests. The various points of appearance and manners in which the wild and domestic agree, plainly show that both species have proceeded from

one common origin; however, the wild cat is much less subject to variety than the tame one, the intestinal canal is considerably shorter; it is, besides, larger and stronger, and the fur of much greater length. The fur is generally soft and fine, of a pale yellow, blended with grey. A dusky list runs along the middle of the back from head to tail, the sides are streaked with grey, and the tail is thick, and marked with alternate bars of white and black. It is partial to hilly and woody tracts, and lives in trees. Of course it is an expert hunter; birds, rabbits, hares, mice, rats, and moles, are among the number of the objects of its rapacious prey: it is well known that in the country domestic cats are lawless poachers; at night they sally forth, and participate largely in the enjoyment of field-sports. Wild cats will ever invade the out-houses of the peaceful farmyard, and carry off young poultry. They will also spread abroad their havoc among lambs, kids, or fawns, and thus prove themselves to be among the most destructive beasts of prey. The wild cat fights with determined valor; if only slightly wounded, it will rush on its assailant, and is repelled with difficulty. Some reach a very considerable size; and have measured upwards of five feet from nose to tail.

THE CARACAL, which is the lynx of the ancients, is common in Barbary, in Arabia, and in the southern half of Asia, and in all those countries which are inhabited by the lion, the panther, and the leopard; like them it depends on prey for its subsistence; but, unlike them, from its inferior size, its inferior strength, to procure that prey it has much difficulty. The Caracal is not spotted like the lynx; it has hair rougher and shorter, its tail is larger, and of a uniform color; its snout is more elongated; in appearance it is less mild, and in disposition it is fiercer. The lynx is an inhabitant of the cold, or at most of the temperate regions; while the Caracal is only found in the hot countries.

THE LYNX is about the size of a moderately large dog, measuring upwards of four feet from head to tail, and the latter is about six inches in length. The body is covered with long soft hair; the feet are thick and strong, and the eyes, which are of a pale yellow color, are proverbially piercing. This animal is found

in Europe, America, and the north of Asia. It is considered to live for many years. It subsists by hunting, and pursuing its prey upon the highest trees; feeding on ermines, weasels, squirre's, and other animals, which are unable to escape from it. It is not satisfied with these minor creatures, but has the audacity to watch the approach of the fallow-deer, hare, and other animals



Lynx.

of the chase, which it darts upon from the branches of trees, where it lies concealed. It seizes them by the throat, sucks their blood, after which it abandons them and goes in search of fresh game. In this respect, it remarkably resembles the tiger, which sucks the blood of its victim, and then leaves it. The sight is singularly quick, and its eyes see its prey at a great distance.

THE CANADA LYNX is a native of North America, and is remarkable for its gait. Its method of progression is by bounds from all four feet at once, with the back arched. It feeds principally on the American hare, as it is not courageous enough to attack the larger quadrupeds. Its length is about three feet. The natives sometimes eat its flesh, which is white and firm, and

not unlike that of the American hare itself. Its skin forms an important article in commerce, and between seven and nine thousand are imported yearly by the Hudson's Bay Company, by whom the grey specimen in the British Museum was presented.

THE CHETAH, or *Hunting Leopard*, is a native of Africa and Southern Asia. With the distinguishing characteristic of the cat species, it combines somewhat of the dog.



Canada Lynx.

Unlike those of the cat, its claws are only slightly retractile. In size he is intermediate between the leopard and the hound, but has a slenderer body, more elevation in his legs, and a less flat fore-part of the head than the former, while he wants the graceful and lengthened form of head and body by which the latter is distinguished. His fur is not sleek, but has a peculiar crispness. Above, the ground color is a bright yellowish fawn; beneath, it is a pure white; the back and sides are covered with innumerable spots, close to each other, from half an inch to an inch in diameter. The spots are larger, but less closely set, on the back than on the head, sides, and limbs. On the chest and under part of the body they are wanting. The tail is marked with interrupted rings of them, till near the extremity, which is surrounded by three or four complete rings. Along the back of the neck and the anterior part of the spine, is a mane, consisting of longer, crisper, and more upright hairs.

In the East he is used in hunting by the higher classes. Hiding himself as much as possible, he approaches the object, and when he has come sufficiently near, he makes five or six enormous bounds, with incredible velocity, darts on his victim, and instantly strangles him. In his domesticated state, the Chetah is one of the most playful and fond of animals. He has not the slightest appearance of the caprice and mischievousness of the cat.

THE ICHNEUMON, from the tip of the nose to the end of the tail, is from twenty-four to forty-two inches in length; nearly

half of which is occupied by the tail. At the base, the tail is very thick; it tapers gradually towards the point, which is slightly tufted. The eyes are of a bright red; the ears almost naked, small and rounded; the nose is long and slender.



Ichneumon.

The legs are short. The hair is hard and coarse, and of a pale reddish grey, each hair being mottled with brown or mouse color.

This animal is domestic in Egypt, like our cat; and, like that, is serviceable in destroying rats and mice; but its inclination for prey and its instinct are much stronger and more extensive than the cat's; for it hunts alike birds, quadrupeds, serpents, lizards, and insects; it attacks every living creature in general, and feeds entirely on animal flesh; its courage is equal to the sharpness of its appetite; it is neither frightened at the anger of the dog nor the malice of the cat, nor even dreads the bite of the serpent: it pursues them with eagerness, and seizes on them, however venomous they may be. As soon as it begins to feel the impressions of their venom, it immediately goes in search of antidotes, and particularly a root that the Indians call by its name, and which, they say, is one of the most powerful remedies in nature against the bite of the viper. It sucks the eggs of the crocodile, as well as those of fowls and birds; it also kills and feeds on young crocodiles, when they are scarcely come out of their shell; and, as fable commonly accompanies truth, it has been currently reported, that, by virtue of this antipathy, the Ichneumon enters the body of the crocodile, when it is asleep, and never quits it till he has devoured its entrails. It was formerly deified by the Egyptians for its serviceable qualities.

THE JAVANESE CIVET differs considerably from the common Civet. The body, narrow, compressed, and higher behind than before, is from fifteen to eighteen inches long. The back is strongly arched. The muzzle is narrow and tapering; the ears short and rounded; the profile forms a perfectly straight line; the tail, tapering gradually to the tip, is as long as the body, and is

marked with eight or nine broad black rings, which alternate with as many of a greyish hue. A much lighter grey than that of the Civet composes the ground color; there is a broad longitudinal dorsal line of black, and on each side two or three narrower black lines, consisting of confluent spots. Over the rest of the body these spots are thickly but rather irregularly scattered, so as to constitute a series of flexuous dotted lines. The side of the neck above is occupied by a deep longitudinal black line, and below, there is a second, which is more obliquely placed. The head is greyish, and has no spots and the legs are externally black.



Javanese Civet.

Civets are active little animals. The whole group is celebrated for a perfume which is secreted in a glandular pouch near the tail, and is of some importance in commerce. If the Civet is kept alive, the perfume is obtained by enclosing it in a long narrow box so that it cannot turn round, and then scraping the secretion from the pouch with a spoon. If the creature is killed, the entire pouch is usually cut off, and sells for a higher sum than when the perfume is sold separately.

The Civet is only found in North Africa, especially in Abyssinia, where it takes up its abode on uncultivated and barren hills. It feeds upon birds and the smaller quadrupeds, which it takes by surprise. As it pursues its prey by night only, its eyes are formed for seeing in the dark, and gleam as do those of a cat.

THE GENET is an animal smaller than the civet. It has a long body, short legs, a sharp snout, and a slender head. Its fur, which is exceedingly smooth and soft, is of an ash color, glossy, and marked with black stripes, which are separate upon the sides, but which unite upon the back. It has also upon the neck a kind of mane, or longish hair, which forms a black streak from the head to the tail, which last is as long as the body, and is marked with seven or eight rings, from the insertion to the tip, which are alternately black and white.

The Genet has, under the tail, and in the very same place with the civets, an opening, or pouch, in which is separated a kind of perfume resembling civet, but less strong, and apt sooner to evaporate. It is an animal somewhat larger than the martin, which it strongly resembles, not only in the form of the body, but also in disposition and habit, and from which it seems chiefly to differ in being more easily tamed. It is a native of Spain, Africa, and the south of Asia.

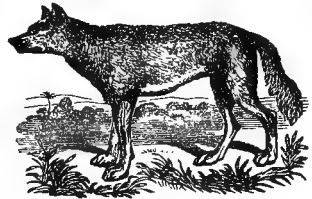
THE DOG TRIBE.

Under this head are classed Dogs, Wolves, Foxes, Hyænas, etc. The Dog is the companion of man, participates in his pleasures, shares his dangers, guards his person and property, and, in short, performs all the various duties which are required of him by his master. The dog is the only animal that is capable of disinterested affection. He is the only one that regards the human being as his companion, and follows him as his friend; the only one that seems to possess a natural desire to be useful to him, or from a spontaneous impulse attaches himself to man. We take the bridle from the mouth of the horse, and turn him free into the pasture, and he testifies his joy in his partially recovered liberty. We exact from the dog the service that is required of him, and he still follows us. He solicits to be continued as our companion and our friend. Many an expressive action tells us how much he is pleased and thankful. He shares in our abundance, and he is content with the scantiest and most humble fare. He loves us while living, and has been known to pine away on the grave of his master.

The genus, or general class in which all the different descriptions are comprehended, is thus described by naturalists. The head is flat on the crown, with a lengthened snout; the claws are long, a little curved, and not retractile; that is, the dog has not the power of drawing them in, or darting them out, like the cat or the tiger: the females produce many young at once, and these are blind, and, in other respects, not quite formed at birth; in about two years most of them attain to full maturity, and the general

duration of their life seems to be between fourteen and twenty years. Though the characteristic features, or marks of domesticated dogs are the same in all countries, there is an amazing difference in their shape and size.

THE DINGO, or *New Holland Hound*, approaches in appearance to the largest kind of shepherd's dog. The head is elongated, the forehead flat, and the ears short and erect, or with a slight direction forwards. The body is thickly covered with hair of two kinds—the one woolly and grey, the other silky and of a deep yellow or fawn color. The limbs are muscular, and, were it not for the suspicious yet ferocious glare



The Dingo.

of the eye, he might pass for a handsome dog. The Australasian dog, according to M. Desmarest, resembles in form and in the proportion of his limbs the common shepherd's dog. He is very active and courageous, covered in some parts with thick hair, woolly and grey, in other parts becoming of a yellowish-red color, and under the belly having a whitish hue. When he is running, the head is lifted more than usual in dogs, and the tail is carried horizontally. He seldom barks.

THE GREYHOUND was once held in such estimation that it was the peculiar companion of a gentleman; who was anciently known by his horse, his hawk, and his Greyhound. In such repute was it, that Canute enacted a law that it should not be kept by any one who was under the rank of a gentleman. It has a long body, a neat and elongated head, full eye, long mouth, sharp and very white teeth, little ears, with thin gristles in them, a straight neck, and full breast; his fore and hind legs are long and straight; his ribs round, strong, and full of sinews, and taper about the belly. It is the swiftest



Highland Greyhound.

of the Dog kind, and easily trained for the chase when twelve months old. It courses by sight, and not by scent, as other hounds do; and is supposed to outlive all the Dog tribe. Buffon imagines it to be descended from the Irish Greyhound, only rendered more thin and delicate by the influence of climate. There is a variety of this species, which is called the Highland Greyhound. It is very large, strong, deep-chested, covered with long rough hair, and has the scent and sagacity of the bloodhound. This kind has become exceedingly scarce.

THE KING CHARLES' SPANIEL is so called from the fondness of Charles II. for it—who usually had some of them following him wherever he went. Its form and character are well preserved in one of the paintings of the unfortunate parent of that monarch and his family. The ears deeply fringed and sweeping the ground, the rounder form of the forehead, the larger and moister eye, the longer and silken coat, and the clearness of the tan, and white and black color, sufficiently distinguish this variety. His beauty and diminutive size have consigned him to the drawing-room or parlor.

THE WATER-SPANIEL.—Of this breed there are two varieties, a larger and smaller, both useful according to the degree of range or the work required; the smaller, however, being ordinarily preferable. Whatever be his general size, strength and compactness of form are requisite. His head is long, his face smooth, and his limbs, more developed than those of the springer, should be muscular, his carcass round, and his hair long and closely curled. Docility and affection are stamped on his countenance, and he rivals every other breed in his attachment to his master.

THE ALPINE SPANIEL, or *Bernardine Dog*, is a breed almost peculiar to the Alps, and to the district between Switzerland and Savoy. The passes over these mountains are exceedingly dangerous from their steepness and narrowness. A precipice of many hundred feet is often found on one side, and perpendicular rocks on the other, while the path is glazed with frozen snow or ice. In many places the path is overhung with huge masses of frozen snow, which occasionally loosen and fall, when the dreadful storms pecu-

liar to these regions suddenly come on, and form an insurmountable barrier, or sweep away or bury the unfortunate traveller. Should he escape these dangers, the path is now become trackless, and he wanders amid the dreary solitudes until night overtakes him; and then, when he pauses from fatigue or uncertainty with regard to the path he should pursue, his limbs are speedily benumbed. Fatal slumbers, which he cannot shake off, steal upon him, and he crouches under some ledge, and sleeps, to wake no more. The snow drifts on. It is almost continually falling, and he is soon concealed from all human help.

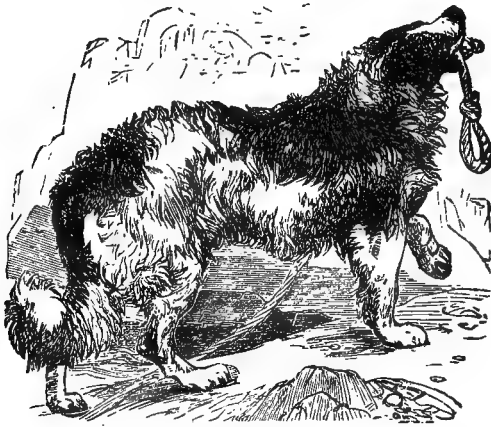


St. Bernard Dog.

On the top of Mount St. Bernard, and near one of the most dangerous of these passes, is a convent, in which is preserved a breed of large dogs trained to search for the benighted and frozen wanderer. Every night, and particularly when the wind blows tempestuously, some of these dogs are sent out. They traverse every path about the mountains, and their scent is so exquisite that they can discover the traveller, although he may lie many feet deep in the snow. Having found him, they set to work and endeavor to scrape away the snow, uttering a deep bark that reverberates from rock to rock, and tells those who are watching in the convent that some poor wretch is in peril. Generally, a little flask of spirits is tied round the neck of the animal, by drinking which the benighted traveller may recruit his strength, until more effectual rescue arrive. The monks hasten in the direction of the sound, and often succeed in rekindling the vital spark before it is quite extinguished. Very many travellers have been thus rescued from death by these benevolent men and their intelligent and interesting quadruped servants.

THE NEWFOUNDLAND is often confounded with the Labrador Dog, a larger and more powerful animal. Both these dogs are

trained by their native masters to draw sledges and little carriages, and on that account are highly esteemed. The carts used in the winter-work are drawn by these dogs, who are almost invariably urged and goaded on beyond their strength, fed only with putrid salt fish, and an inadequate quantity even of that. A great many



Newfoundland Dog.

of them are worn out and die before the winter is over; and, when the summer approaches, and the fishing season commences, many of them are quite abandoned, and, uniting with their companions, prowl about, preying on the neighboring flocks, or absolutely starving.

Mr. Macgregor, however, states that in almost every other part of British America they are valuable and useful. They are remarkably docile and obedient to their masters, serviceable in all the fishing countries, and yoked in pairs to draw the winter's fuel home. They are faithful, good-natured, and ever friendly to man. They will defend their master and their master's property, and suffer no person to injure the one or the other; and, however extreme may be the danger, they will not leave them for a minute. They seem only to want the faculty of speech, in order to make their good wishes and feelings understood, and they are capable

of being trained for all the purposes for which every other variety of the canine species is used.

The feet of this Dog are more palmated than usual; which structure enables it to swim very fast, to dive easily, and to bring up anything from the bottom of the water. It is, indeed, almost as fond of the water as if it were an amphibious animal. So sagacious is it, and so prompt in lending assistance, that it has saved the lives of numberless persons who were on the point of drowning; and this circumstance, together with its uniform good temper, has justly rendered it a universal favorite.

THE ESQUIMAUX DOG is a beast of burden and of draught, usefully employed by the inhabitants of the extreme parts of North America and the neighboring islands. When the Esquimaux Indian goes in pursuit of the seal, the reindeer, or the bear, his dogs carry the materials of his temporary hut, and the few necessities of his simple life;



Esquimaux Dog.

or, yoked to the sledge, often draw him and his family full sixty miles a day over the frozen plains of these inhospitable regions. At other times they assist in the chase, and run down and destroy the bear and the reindeer on land, and the seal on the coast.

These dogs are very early trained to the work which they are destined to follow, and even at the tender age of four or five months are harnessed together or in company with older animals and are compelled, either by persuasion or brutal chastisement, to draw heavy weights, and thus soon become accustomed to the trammels of the rude gearing, and familiar with the service that they afterwards perform with so much sagacity and alacrity.

Capt. Lyon states that they are very similar in appearance to the shepherd dog of England, but more muscular and broad chested, owing to severe work; ears pointed, of a savage appear

ance; the finer dogs are equal to the Newfoundland breed in point of height and general symmetry.

THE SHEEP DOG possesses much of the same form and character in every country. The muzzle is sharp, the ears are short and erect, and the animal is covered, particularly about the neck, with thick and shaggy hair. He has usually two dew claws on each of the hind legs; not, however, as in the one claw of other dogs, having a jointed attachment to the limb, but merely connected by the skin and some slight cellular substance. These excrescences should be cut off when the dog is young. The tail is slightly turned upwards and long, and almost as bushy as that of a fox, even in that variety whose coat is almost smooth. He is of a black color, or black prevails, mixed with grey or brown.

Professor Grogner gives the following account of this dog as he is found in France:—“The shepherd’s dog, the least removed from the natural type of the dog, is of a middle size; his ears short and straight; the hair long, principally on the tail, and of a dark color; the tail is carried horizontally or a little elevated. He is very indifferent to caresses, possessed of much intelligence and activity to discharge the duties for which he was designed. In one or other of its varieties it is found in every part of France. Sometimes there is but a single breed, in others there are several varieties. It lives and maintains its proper characteristics, while other races often degenerate. Everywhere it preserves its proper distinguishing type. It is the servant of man, while other breeds vary with a thousand circumstances. It has one appropriate mission, and that it discharges in the most admirable way: there is evidently a kind and wise design in this.”

THE FOXHOUND and BEAGLE are not very dissimilar in form or habits. They both follow game by the scent, and are used in hunting. The Foxhound, as its name implies, is used for hunting the fox, and enters into the sport with extraordinary eagerness. These dogs are trained with great care: whole books have been written on their education, and men are engaged at high salaries to train them to the sport. England possesses the finest breed of foxhounds in the world, and certainly no expense is spared to im-

prove them, as one kennel is said to have cost nearly twenty thousand pounds. The height of the foxhound is about twenty-two inches.

THE BEAGLE is used principally for hare hunting. It is much smaller than the foxhound, and not nearly so swift, but its scent is so perfect that it follows every track of the flying hare, unravels all her windings, and seldom fails to secure her at last. Sportsmen usually prefer the smallest beagles obtainable. The most valuable pack of these dogs known in England used to be carried to and from the field in a pair of panniers slung across a horse's back. Unfortunately, this pack was so well known, that numerous were the attempts to gain possession of it. One ill-fated evening, as the dogs were returning in their panniers after the day's sport, the keeper was decoyed away by some stratagem, and when he returned, his dismay was great to find that the dogs, panniers, and horse were all missing. No traces of them were discovered, and it was conjectured that they must have been sold on the Continent. It is a common custom in the military schools, and sometimes at the universities, to follow the beagle on foot.

THE BLOODHOUND does not materially differ in appearance from the old deer-hound of a larger size, trained to hunt the human being instead of the quadruped. If once put on the track of a supposed robber, he would unerringly follow him to his retreat, although at the distance of many a mile. Such a breed was necessary when neither the private individual nor the government had other means to detect the offender. Generally speaking, however, the bloodhound of former days would not injure the culprit that did not attempt to escape, but would lie down quietly and give notice by a loud and peculiar howl what kind of prey he had found. Some, however, of a savage disposition, or trained to unnatural ferocity, would tear to pieces the hunted wretch, if timely rescue did not arrive.

The bloodhound is taller and better formed than the deer-hound. It has large and deep ears, the forehead broad and the muzzle narrow. The expression of the countenance is mild and

pleasing, when the dog is not excited; but, when he is following the robber, his ferocity becomes truly alarming.

THE SETTER is evidently the large spaniel improved to his peculiar size and beauty, and taught another way of marking his game, viz., by *setting* or crouching. If the form of the dog were not sufficiently satisfactory on this point, we might have recourse



The Setter.

to history for information. The setter is used for the same purpose as the pointer, and there is great difference of opinion with regard to their relative value as sporting-dogs. Setters are not so numerous; and they are dearer, and with great difficulty obtained pure. It was long the fashion to cross and mix them with the pointer, by which no benefit was obtained, but the beauty of the dog materially impaired; many Irish sportsmen, however, were exceedingly careful to preserve the breed pure. Nothing of the pointer can be traced in them, and they are useful and beautiful dogs, altogether different in appearance from either the English or Scotch setter.

THE SPANISH POINTER, originally a native of Spain, was once considered to be a valuable dog. He stood higher on his

legs, but was too large and heavy in his limbs, and had widely spread, ugly feet, exposing him to frequent lameness. His muzzle and head were large, corresponding with the acuteness of his smell. His ears were large and pendent, and his body ill-formed. He was naturally an ill-tempered dog, growling at the hand that would caress him, even although it were his master's. He stood steadily to his birds; but it was difficult to break him of chasing the hare. He was deficient in speed. His redeeming quality was his excellent scent, unequalled in any other kind of dog.

THE MASTIFF. — The head considerably resembles that of the bull-dog, but with the ears dependent. The upper lip falls over the lower jaw. The end of the tail is turned up, and frequently the fifth toe of the hind feet is more or less developed.



The Mastiff.

The nostrils are separated out one from another by a deep furrow. He has a grave and somewhat sullen countenance, and his deep-toned bark is often heard during the night. The mastiff is taller

than the bull-dog, but not so deep in the chest, and his head is large compared with his general form.

THE BULL-DOG. — The round, thick head, turned-up nose, and thick and pendulous lips of this dog are familiar to all, while his ferocity makes him in the highest degree dangerous. In general he makes a silent although ferocious attack, and the persisting powers of his teeth and jaws enable him to keep his hold against any but the greatest efforts, so that the utmost mischief is likely to ensue as well to the innocent visitor of his domicile as the ferocious intruder. The bull-dog is scarcely capable of any education, and is fitted for nothing but ferocity and combat.

The name of this dog is derived from his being too often employed, until a few years ago, in baiting the bull. It was practised by the low and dissolute in many parts of the country. Dogs were bred and trained for the purpose; and, while many of them were injured or destroyed, the head of the bull was lacerated in the most barbarous manner. Nothing can exceed the fury with which the bull-dog rushed on his foe, and the obstinacy with which he maintained his hold. He fastened upon the lip, the muzzle, or the eye, and there he hung in spite of every effort of the bull to free himself from his antagonist.

THE BULL-TERRIER.—This dog is a cross between the bull dog and the terrier, and is generally superior, both in appearance and value, to either of its progenitors. A second cross considerably lessens the underhanging of the lower jaw, and a third entirely removes it, retaining the spirit and determination of the animal. It forms a steadier friendship than either of them, and the principal objection to it is its love of wanton mischief, and the dangerous irascibility which it occasionally exhibits.

THE TERRIER. — The forehead is convex; the eye prominent; the muzzle pointed; the tail thin and arched; the fur short; the ears of moderate size, half erect, and usually of a deep black color, with a yellow spot over the eyes. It is an exceedingly useful animal; but not so indispensable an accompaniment to a pack of foxhounds as it used to be accounted. The coat of the terrier may be either smooth or rough; the smooth-haired ones are more

delicate in appearance, and are somewhat more exposed to injury or accident; but in courage, sagacity, and strength, there is very little difference if the dogs are equally well bred. The rough terrier possibly obtained his shaggy coat from the cur, and the smooth terrier may derive his from the hound.

There is reason to believe that the Scotch Terrier is far older than the English Terrier. There are three varieties: first,



Scotch Terrier

the common Scotch Terrier, twelve or thirteen inches high; his body muscular and compact—considerable breadth across the loins—the legs shorter and stouter than those of the English terriers. The head large in proportion to the size of the body—the muzzle small and pointed—strong marks of intelligence in the countenance—warm attachment to his master, and the evident devotion of every power to the fulfilment of his wishes. The hair is long and tough, and extending over the whole of the frame. In

color, they are black or fawn: the white, yellow, or pied are always deficient in purity of blood.

Another species has nearly the same conformation, but is covered with longer, more curly, and stouter hair; the legs being apparently, but not actually, shorter. This kind of dog prevails in the greater part of the Western Islands of Scotland, and some of them, where the hair has obtained its full development, are much admired.

THE SHOCK DOG is traced by Buffon, but somewhat erroneously, to a mixture of the small Danish dog and the pug. The head is round, the eyes large, but somewhat concealed by its long and curly hair, the tail curved and bent forward. The muzzle resembles that of the pug. It is of small size, and is used in this country and in Europe as a lap-dog. It is very properly described by the author of "The Field Book" as a useless little animal, seeming to possess no other quality than that of a faithful attachment to his mistress.

There are circumstances which go to prove that dogs are endowed with a degree of intelligence almost equal to that of man. As an instance, we will describe the performance of a game of dominoes, by one of a pair of dogs, which M. Léonard, a French gentleman, had been training for some time: After many other performances, M. Léonard invited a gentleman to play a game of dominoes with one of them. The younger and slighter dog then seated himself on a chair at the table, and the writer and M. Léonard seated themselves opposite. Six dominoes were placed on their edges in the usual manner before the dog, and a like number before the writer. The dog having a double number, took one up in his mouth, and put it in the middle of the table; the writer placed a corresponding piece on one side; the dog immediately played another correctly, and so on until all the pieces were engaged. Other six dominoes were then given to each, and the writer intentionally placed a wrong number. The dog looked surprised, stared very earnestly at the writer, growled, and finally barked angrily. Finding that no notice was taken of his remonstrances, he pushed away the wrong domino with his nose, and

took up a suitable one from his own pieces, and placed it in its stead. The writer then played correctly; the dog followed, and won the game. Not the slightest intimation could have been given by M. Léonard to the dog. This mode of play must have been entirely the result of his own observation and judgment. It should be added that the performances were strictly private. The owner of the dogs was a gentleman of independent fortune, and the instruction of his dogs had been taken up merely as a curious and amusing investigation.

THE WOLF, as well externally as internally, so nearly resembles the dog, that he seems modelled upon the same plan; and yet he only offers the reverse of the image. If his form be similar, his nature is different; and indeed they are so unlike in their dispositions, that no two animals can have a more perfect antipathy to each other. A young dog shudders at the sight of a Wolf; a dog who is stronger, and knows his strength, bristles up at the



Wolf.

sight, testifies his animosity, attacks him with courage, endeavors to put him to flight, and does all in his power to rid himself of a presence that is hateful to him. They never meet without either flying from, or fighting with each other. If the Wolf is the

stronger, he tears and devours his prey: the dog, on the contrary, is more generous, and contents himself with his victory.

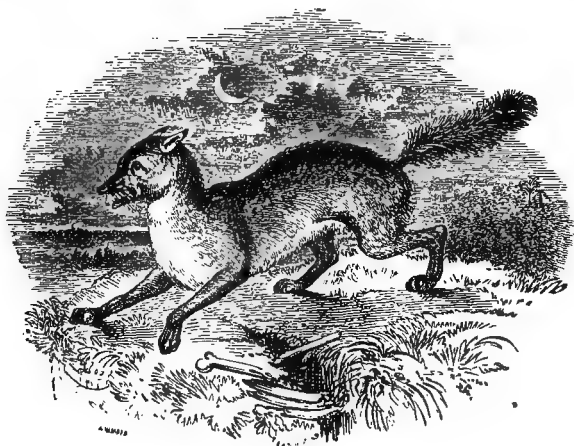
The dog, even in his savage state, is not cruel; he is easily tamed, and continues firmly attached to his master. The Wolf, when taken young, becomes tame, but rarely forms an attachment. Nature is stronger in him than education; he resumes, with age, his natural dispositions, and returns, as soon as he can, to the woods whence he was taken. Dogs, even of the dullest kinds, seek the company of other animals; they are naturally disposed to follow and accompany other creatures: the Wolf, on the contrary, is the enemy of all society; he does not even keep much company with those of his kind. When they are seen in packs together, it is not to be considered as a peaceful society, but a combination for war: they testify their hostile intentions by their loud howlings, and by their fierceness discover a project for attacking some great animal, such as a stag or a bull, or for destroying some formidable dog. The instant their military expedition is completed, their society is at an end; they then part, and each returns in silence to his solitary retreat. There is not even any strong attachment between the male and female; they seek each other only once a year, and remain but a few days together.

The difference in the duration of the pregnancy of the she Wolf, which goes with young above a hundred days, and the bitch, which does not go above sixty, proves that the Wolf and the dog, so different in disposition, are still more so in one of the principal functions of the animal economy.

The Wolf generally brings forth five or six, and sometimes even nine, at a litter. The cubs are brought forth, like those of the bitch, with the eyes closed. The dam suckles them for some weeks, and teaches them betimes to eat flesh, which she prepares for them, by chewing it first herself. They do not leave the den where they have been littered, till they are six weeks or two months old. It is not, however, till they are about ten or twelve months old, and till they have shed their first teeth and completed the new, that the dam thinks them in a capacity to shift for themselves. Then, when they have acquired arms from Nature, and

have learned industry and courage from her example, she declines all future care of them, being again engaged in bringing up a new progeny. These animals require two or three years for their growth, and live to the age of fifteen or twenty.

THE JACKAL is larger and taller than the fox; the head is above of a fox-red color; the upper lip is white on each side of the nose, and the throat is of the same color; outwardly, the ears are fox-red, inwardly, white; the neck and back are all over of a



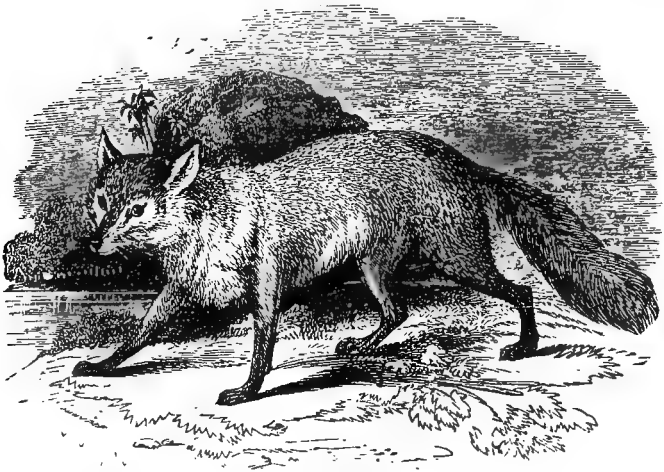
Jackal.

grey-yellow; behind the neck and on the back is a large marking of dark grey in the form of a lancet, and pointing to the tail; the tail is straight and more bushy than that of the fox, and it is of a greyish-yellow; it is eleven inches in length, and the body about thirty.

Some think that the jackal is an animal betwixt the dog and the wolf; in familiarity it resembles the former, and in ferocity the latter. Jackals in their natural state associate in packs; during the night they hunt, in full cry, the gazelle and other animals of the antelope tribe: they devour poultry and lambs, ravage the streets of villages, and will even destroy unprotected childrer: when

they cannot meet with any live prey, they dig up the dead bodies of human beings. When once accustomed to feed on human flesh, they will follow caravans and armies, and run from country to country: their appetite is the most vehement, so that they will feed on the driest leather or infectious flesh, and on animals in a state of the most loathsome putridity: their howlings in the night are loud and hideous, for when one begins the whole join in one general cry.

THE FOX is an animal of the dog kind; it resembles in form the common dog, and in size the spaniel: its tail is straight, bushy, and with a white tip; it has a broad head, a sharp snout, a flat forehead, eyes obliquely placed, ears sharp and erect, and its



The Fox.

body well covered with hair: it is found in all the northern and temperate regions of the globe; it is remarkable for its smell, by which it is so easily traced and followed by hounds accustomed to the pursuit, over extensive tracts of country.

The fox is proverbial for his cunning, deriving greater benefit from his craft than from his courage: he chooses his habi

tation and prepares his bed under hard ground, in brakes, woods, or coppices: he is careful to contrive proper outlets to escape from danger: his abode is generally near the habitations of men, in the neighborhood of some farm-yard or village, whither he can resort, when all is quiet, to supply himself with poultry. His manner of attacking, killing, and carrying off his prey, all betokens the most surprising caution, scresy, and craft: he is a most adept and successful thief, and seldom makes a fruitless expedition. This animal profits much by experience; if he is ensnared by a favorite lure in the days of his inexperienced youth, he can never afterwards be caught by the same expedient; he seems to smell the very iron of the trap, and carefully avoids it.

On the banks of the Kentucky river rise huge rocky bluffs many feet in height. A fox that lived near this river was constantly hunted, and as regularly lost over the bluff. Now, nothing short of wings would have enabled the animal to escape with life down a perpendicular cliff. At last, a hunter, being determined to discover the means by which the animal baffled them, concealed himself near the bluff.

Accordingly, in good time the fox came to the top of the cliff as usual and looked over. He then let himself down the face of the cliff by a movement between a leap and a slide, and landed on a shelf not quite a foot in width about ten feet down the cliff. The fox then disappeared into a hole above the shelf. On examination, the shelf turned out to be the mouth of a wide fissure in the rock, into which the fox always escaped. But how was he to get out again? He might slide down ten feet, but he could never leap ten feet from a ten-inch shelf up the face of a perpendicular rock. This impossibility struck the hunter's mind, so he instituted a search, and at length discovered an easier entrance into the cave from the level ground.

The fox was too wise to use that entrance when the hounds were behind him, so he was accustomed to cut short the scent by dropping down the rock, and then, when all the dogs were at the edge of the cliff, he walked out at his leisure by the other entrance.

The Arctic Fox changes its fur, and becomes white during the winter.

THE HYÆNA.—The skin of the common hyæna is striped; its hair long, erect, and coarse; its head broad and flat; and its eyes have a frightful expression of sullen wildness. From the head to the tail, along the top of the back, runs a bristly mane, which greatly adds to the fierceness of its appearance. The tail is short and bushy. The hyæna carries its head somewhat like a dog when



Striped Hyæna.

pursuing the scent, with its nose near the ground, which gives to the shoulders an elevated appearance. It is about the size of a large dog or wolf, while in form and disposition it more resembles the latter. Its cry is most peculiar and forbidding, in its beginning resembling the moaning of the human voice, and ending with a hideous and violent bellowing. Its eyes shine in the dark, and it is supposed to see as clearly in the night as in the day. It is an inhabitant of Asiatic Turkey, Syria, Barbary, and many other parts of Africa. It is a solitary animal, dwelling in the caverns of mountains, or in dens which it excavates for itself. Usually it

lies concealed through the day, and roams abroad at night for its prey.

THE SPOTTED HYÆNA is a native of Southern Africa, and abounds in the neighborhood of the Cape of Good Hope, where it is called the Tiger Wolf. It is somewhat inferior in size to the Striped Hyæna, but, in its wild state, has the same manners and propensities. Its short muzzle is less abruptly truncated, and its ears, short and broad in form, are of a nearly quadrilateral figure. The general color of the hide is a dirty yellow, or yellowish brown, and the whole body is covered with spots of a blackish brown, excepting the under part of the belly and of the breast, the inner surface of the limbs and the head. The muzzle is black, and the tail covered with long bushy hair of a blackish brown. Like the Striped Hyæna, the spotted species has jaws of enormous strength, with which it easily breaks to pieces the hardest bones.

It is a common, but erroneous idea, that the Hyæna is wholly savage and untameable. Both species have been tamed, and instances are recorded of individuals having manifested all the attachment of a dog. The Striped Hyæna has recently been domesticated in the Cape territory, and is considered one of the best hunters after game, and as faithful and diligent as any of the common domestic dogs. The truth is, that the Hyæna has a very natural aversion to close confinement, and when exhibited, as he generally is, in a narrow cage, he is miserable, and consequently irritable.

THE WEASEL TRIBE.

The animals of this tribe are readily distinguished by their long, slender bodies, short muzzle, sharp teeth, and predatory habits. They inhabit almost every part of the world, and procure their food by creeping on the unsuspecting victim, generally a rabbit, rat, or bird, and then suddenly darting at it and piercing its neck with their sharp teeth. Almost all the weasels devour the brain and suck the blood of their prey, but seldom touch the flesh. Of weasels there are twenty-nine species, including the various

descriptions of ermines, whose skins contribute to the costly splendor and comfort of the robes of princes.

THE COMMON WEASEL is of a pale reddish-brown color, with the throat, breast and lower part white; the head and body measuring seven inches, and the tail two and a half. This species



Weasel.

inhabit the northern parts of Europe, Asia, and America, and are found in the northern provinces of Persia, as also in Barbary. As their body is small and remarkably flexible, they can easily enter into very narrow openings for carrying on their bloody ravages. They frequent barns and granaries, where they spread dreadful havoc among the mice and rats, being even more formidable enemies to these creatures than the cat. They often take up their abode in old willows, where the female brings forth her young, from six to eight in number. She has a large portion of maternal care. She prepares for them a bed of straw lined with leaves and other herbage. The young are born blind. In pursuing their prey, weasels bound to a great length.

THE FERRET-WEASEL has red and fiery eyes; the color of the whole body is a very pale yellow; the length from nose to tail

is about fourteen inches, and the tail about five. In its wild state it is an inhabitant of Africa. When a ferret is introduced into the burrows of rabbits, or the haunts of rats, it is most safe to muzzle him; for in this case, he is prevented from killing them in



Ferret.

their holes, and only obliges them to come out and be caught. If the ferret is put in without a muzzle, he is in danger of being impelled by his natural propensity and instinct to suck the blood of the rabbit or rat, when he generally falls asleep, and may thus be lost. Ferrets are also used for catching birds in the holes of walls and old trees. It is easily tamed, but very irascible. It has an offensive odor, which has given rise to the supposition that it is only a domesticated Polecat, and when irritated is much more offensive.

THE ERMINE OR STOAT. — The weasel with a black tail is called the *Ermine* when it is white, and the *Stoat* when it is red or yellowish. Though it is a less common animal than the weasel, yet there are numbers to be found in the old northern forests, and sometimes during the winter in the neighborhood of woody grounds.

It is always easy to distinguish it from the common weasel, because the tip of its tail is uniformly of a deep black, while the edges of its ears, and the extremities of its feet, are white.

THE PINE MARTEN, or *Pine Weasel*, is originally a native of northern regions, where they are so numerous, that the quantity of furs produced from this

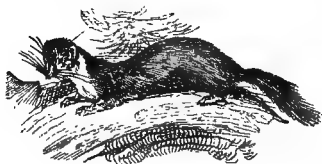


Pine Marten

animal alone, and carried into other countries, is actually astonishing. In temperate climates, on the contrary, it is rarely, and in warm climates never, to be found. It is not uncommon in the wild parts of Scotland, among the

wooded ravines of the mountains. Alike averse to open countries, and to countries which are inhabited, it remains in the bosom of some forest, ranges below through the labyrinths of the thicket, or towers aloft upon the branches of trees. It subsists by the chase, and destroys a prodigious quantity of birds, whose nests it searches for, and invades, in order to devour the eggs.

THE MARTEN, supposed by many to be the same as the Pine Marten, is yet entirely distinct. Its head is small, and elegantly formed; its eye is lively; its limbs are supple; its body is astonishingly flexible; and all its movements are quick. The back,



The Marten.

sides, and tail of the marten are covered with a fine downy fur, with longer hair intermixed; the roots of an ash color, the middle of a bright chestnut, and the points black. The head is brown, with a slight cast of red; the legs

and feet are of a chocolate color, and the throat and breast are white. This animal, it is said, brings forth as often as the cat. The growth of the young ones is very quick; and hence it may be inferred, that it is an animal whose life does not exceed eight or ten years. Its smell, which is agreeable, is like that of coun-

terfeit musk. Both the marten and the pine marten, as well as a number of other animals, have interior vesicles which contain a strong-scented substance like that which the civet furnishes.

THE SABLE, long famous for its costly fur, which is thought worthy to adorn the coronation robes of a monarch, inhabits Siberia. The chase after these animals is attended with dreadful hardships and great danger. Sometimes a sable will not be seen for days; sometimes the bait of the trap is eaten by other animals, such as gluttons, etc.; sometimes the hunter's provisions fail; he spends days and nights in the midst of snow, surrounded by interminable pine forests, and exposed to the piercing blasts of the tempest. Many hunters lose their lives in these terrible solitudes, overwhelmed by snow-storms, or famished with hunger.

THE POLECAT is larger than the weasel, the ermine, or the ferret, being one foot five inches long; whereas, the weasel is but six inches, the ermine nine, and the ferret eleven inches. It so much resembles the ferret in form, that some have been of opinion they were one and the same animal. The polecat is particularly destructive among pigeons, when it gets into a dove-house; without making so much noise as the weasel, it does a great deal more mischief; it dispatches each with a single wound in the head; and, after killing a great number, and satisfying itself with their blood, it then begins to think of carrying them home. This it carefully performs, going and returning, and bringing them one by one to its hole; but if it should happen that the opening by which it got into the dove-house be not large enough for the body of the pigeon to get through, this mischievous creature contents itself with carrying away the heads, and makes a most delicious feast upon the brains.

THE OTTER, which forms a somewhat erratic genus of the weasel family, is aquatic in its habits, and has legs short in proportion to the size of its body; but they are strong, broad, and muscular: the joints have this peculiarity — they are articulated so loosely, that the animal has the power of turning them quite back with great ease, and bringing them on a line with the body, so as to perform the office of fins. As the animal is amphibious, the

feet are provided with five toes each, which are naturally expanded, and are connected by a membrane like the toes of a web-footed fowl, and are all so equally distant, that there is no distinction of any in the place of the great toe in other animals. The otter very strikingly resembles the beaver in its head and face. The ears are small; and, what is very singular and rarely to be seen, they



Otter.

are placed back of the eyes, near the upper jaw, as in the beaver. The neck is short, and equal to the head in thickness; the nose and corners of the mouth are furnished with very long whiskers. It is provided with thirty-six teeth; above and below with six cutting and two canine, and five grinders on each side in both jaws. We can easily judge from the furniture of the mouth of this animal, what are its habits, and its means of support and mode of living. The hair of its body is short and of a chestnut brown, but under the belly of a paler color. On each side of the nose there are two small spots of white, and another under the chin. The otter is amphibious, living both in water and on land

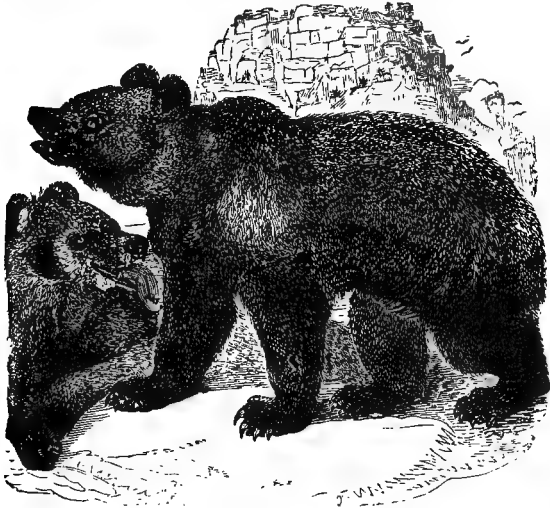
Like the beaver, it will visit both the salt water and the fresh. Some otters have been observed swimming in the sea, and bringing their booty to the shore. This animal, on his fishing excursions, will swim two miles together, and always against the stream, that when his belly is full the stream may carry him down again to his lodging: this is invariably near the water, and is artificially built with boughs, sprigs, and sticks, couched together in excellent order. The entrance to its abode is always under water. It produces four young ones at a time.

THE BEAR TRIBE.

THE BEARS and their allies are mostly heavy, and walk with the whole foot placed flat on the ground, unlike the cats, dogs, etc., who walk with merely their paws or toes. All the bears are omnivorous, that is, they can eat either animal or vegetable food; so that a leg of mutton, a pot of honey, a potato, or an apple, are each equally acceptable. In different countries the bear varies in color; there are, therefore, three kinds, the white, the black, and the brown. There is something very unsightly in the bear; it is covered with a thick shaggy fur, and looks like a large shapeless lump. Bears vary in size; some are about the size of a mastiff, and others as large as a small heifer. Their skull is thin but firm, and they are provided with a large supply of brain, in consequence of which they are probably so sagacious.

THE BLACK BEAR is found, in considerable numbers, in the northern districts of America. In size and form he approaches nearest to the Brown Bear; but his color is a uniform shining jet black, except on the muzzle, where it is fawn-colored; on the lips and sides of the mouth it is almost grey. The hair, except on the muzzle, is long and straight, and is less shaggy than in most other species. The forehead has a slight elevation, and the muzzle is elongated, and somewhat flattened above. The young ones, however, are first of a bright ash color, which gradually changes into a deep brown, and ends by becoming a deep black. The American Black Bear lives a solitary life in forests and uncultivated deserts, and subsists on fruits, and on the young shoots

and roots of vegetables. Of honey he is exceedingly fond, and, as he is a most expert climber, he scales the loftiest trees in search of it. Fish, too, he delights in, and is often found in quest of them



Black Bear.

on the borders of lakes and on the seashore. When these resources fail, he will attack small quadrupeds, and even animals of some magnitude. As, indeed, is usual in such cases, the love of flesh in him grows with the use of it.

THE GRIZZLY BEAR inhabits the northern part of America; but, unlike the American Black Bear, he is perhaps the most formidable of all bears in magnitude and ferocity. He averages twice the bulk of the Black Bear, to which, however, he bears some resemblance in his slightly elevated forehead, and narrow, flattened, elongated muzzle. His canine teeth are of great size and power. The feet are enormously large; the breadth of the fore foot exceeding nine inches, and the length of the hind foot, exclusive of the talons, being eleven inches and three-quarters. and its breadth seven inches. The talons sometimes measure more

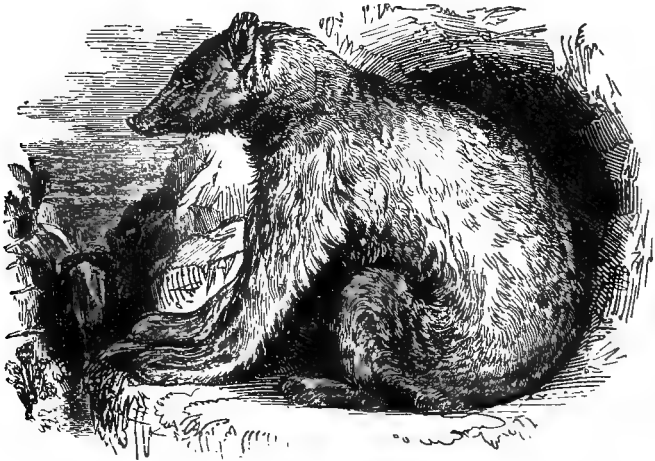
than six inches. He is, accordingly, admirably adapted for digging up the ground, but is unable to climb trees, in which latter respect he differs wholly from every other species. The color of his hair varies to almost an indefinite extent, between all the intermediate shades of a light gray and a black brown; the latter tinge, however, being that which predominates. It is always in some degree grizzled, by intermixture of grayish hairs, only the brown hairs being tipped with gray. The hair itself is, in general, longer, finer, and more exuberant than that of the Black Bear.

The neighborhood of the Rocky Mountains is one of the principal haunts of this animal. There, amidst wooded plains, and tangled copses of bough and underwood, he reigns as much the monarch as the lion is of the sandy wastes of Africa. Even the bison cannot withstand his attack. Such is his muscular strength that he will drag the ponderous carcass of the animal to a convenient spot, where he digs a pit for its reception. The Indians regard him with the utmost terror. His extreme tenacity of life renders him still more dangerous; for he can endure repeated wounds which would be instantaneously mortal to other beasts, and, in that state, can rapidly pursue his enemy; so that the hunter who fails to shoot him through the brain, is placed in a most perilous situation.

THE BROWN BEAR is not only a savage, but a solitary animal; he takes refuge in the most unfrequented places, and the most dangerous precipices of uninhabited mountains. He chooses his den in the most gloomy parts of the forest, in some cavern that has been hollowed by time, or in the hollow of some old enormous tree. Thither he retires alone, and passes a part of the winter without provisions, or without ever stirring abroad. He is not, however, entirely deprived of sensation, like the dormouse or the marmot, but seems rather to subsist upon the exuberance of his former flesh, and only feels the calls of appetite when the fat he had acquired in summer begins to be considerably wasted.

When this happens, which we are told it generally does at the expiration of forty or fifty days, the male forsakes his den; but the female remains confined for four months: by which time

she has brought forth her young. That the latter should not only be able to subsist, but even to nurse their offspring, without receiving themselves any food for such a length of time, is highly improbable. When with young, however, it is allowed that they



The Brown Bear.

are exceedingly fat, as also that, being covered with a very thick coat, sleeping the greatest part of their time, and giving themselves no exercise or motion, they must necessarily lose very little by perspiration.

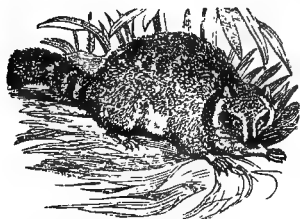
THE POLAR BEAR is distinguished by his tremendous ferocity. In size it far surpasses the brown bear, as it sometimes reaches the length of twelve feet. Its head and neck are more lengthened, and the body is longer in proportion to its bulk. In the Polar seas, it may literally be said to swarm. There, it is seen not only on the land and fixed ice, but on floating ice several leagues out at sea. In the latter manner White Bears are sometimes conveyed to Iceland, where they are so much dreaded by the inhabitants that a crusade is immediately commenced against them. At sea, the food of this animal is fish, seals, and the carcasses of whales;

on land, it preys upon deer and other animals, and will eat various kinds of berries. In winter, it beds itself deeply under the snow or eminences of ice, and awaits, in a torpid state, the return of the sun. It suffers exceedingly when exposed to great heat. It is a formidable antagonist, either by land or water, as it dives with great ease, and is able to chase the seal amid the waves. Nelson nearly lost his life by imprudently attacking one of these animals with no weapon but a rusty musket, which could not be induced to fire; and, indeed, had he not been separated from the infuriated bear by a cleft in the ice, he could hardly have escaped its claws. As the seals frequently crawl out of the water upon rocks or fragments of ice, the Polar Bear is forced to swim after them; but lest they should observe him he makes his approaches by a succession of dives, and contrives that the last dive brings him directly under the unsuspecting seal, who is immediately grasped and killed. Richardson states that these bears are often drifted from Greenland to Iceland on fields of ice, and that they find the flocks and herds so very delicious after a long course of seal diet, that the inhabitants are forced to rise in a body and put an end to their depredations.

THE KINKAJOU, or *Honey Bear*, is a native of South America. Its tongue is capable of being inserted into crevices, and drawing out any insects that may be lying concealed beyond the reach of its paws. The Spanish missionaries gave it the name of Honey Bear, because it is a great devastator of the nests of the wild bee, using its long tongue to lick the honey out of the cells. When in captivity it is very tame and gentle, and will play with an acquaintance as does a cat. It displays great address in capturing flies and other insects with its tongue, and it is amusing to watch how its eyes gleam directly that a fly settles within its reach. During the earlier part of the day it will not move, but towards dusk it becomes very brisk and animated, climbing about its cage, and swinging from the top bars by its tail and hind paws.

THE RACCOON is a native of North America and the West Indies, nor has it ever yet been found in any part of the Old World. Its fur is fine, long, thick, blackish at the surface, and grey towards

the bottom ; its head like that of a fox, but its ears are round and shorter ; its eyes are large, of a yellowish green, and over them



Raccoon.

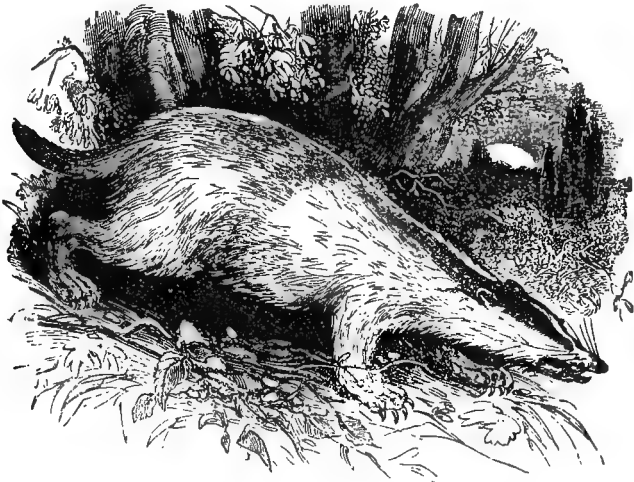
there is a black and transverse stripe ; its snout is sharp ; its tail is thick, but tapering towards a point, and marked alternately from one end to the other with black and white and brownish rings, and is at least as long as the body ; its fore legs are much shorter than the hind ones, and both are armed with five strong, sharp claws. This

animal, while eating, usually supports itself on its hind legs, and uses its paws to hold its food, and it can open an oyster with the utmost dexterity. Poultry are very favorite objects of its attack, and it is said to be as destructive in a farm-yard as any fox, for it only devours the heads of the murdered fowl. Like the fox, it prowls by night. If water be near, it generally dips its food into it. By its pointed claws it is enabled to climb trees with great facility. It runs up the trunk with the same swiftness that it moves over the plain, and frolics about to the extremity of the branches with great security and ease : on the ground, indeed, it rather bounds than runs, and its motions, though singularly oblique, are yet always quick and expeditious.

THE BADGER. — This harmless and much-injured animal (which is often subjected to such ill treatment that the term “badgering” a person is used to express irritating him in every possible way) is found throughout Europe and Asia. It is not now very common in England, but is frequently found in Scotland and Ireland. The Badger lives at the bottom of deep burrows which it excavates, and in which it passes all the day, sleeping on a very comfortable bed of hay and grass. When the evening approaches it seeks its food, consisting of roots, fruit, insects, and sometimes young rabbits. It is also said to attack the wild bee, and boldly to devour the honey and combs ; its thick hair and skin rendering it utterly regardless

of the stings of the enraged bees, who "might as well sting a barber's block."

The cruel sport of baiting the badger is still continued. The poor creature is placed inside a kennel, and dogs set at it, who are not unfrequently worsted by the badger, as its bite is terrific,



Badger.

and its skin so tough, and hair so thick, that the bites of the dog do not take full effect. Its skin is rather valuable, the hair being extensively employed in the manufacture of brushes, and its fur being in some request for holsters. The omnivorous and thrifty Chinese eat its flesh, as indeed they will that of most animals, and consider its hams a very great dainty. The length of the badger is about two feet three inches.

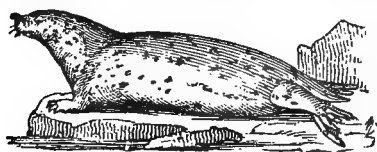
THE WOLVERINE, GLUTTON, or CARCAJOU, inhabits North America. Accounts vary respecting the habits of this animal. The older naturalists say that it ascends trees, and drops on the neck of any unfortunate deer which happens to pass beneath, and that having once secured its prey, it never leaves it until the last morsel is consumed. Be that as it may, the Glutton is known to

hunt after its prey, which it follows for many miles at a slow but persevering pace, and seldom fails of bringing it down at last. It is especially hated by the sable hunter, as it will follow him in his rounds, robbing the traps of the baits as it proceeds, and should a sable be caught it generally tears it to pieces, or buries it in the snow. The hunter has some slight revenge in robbing it of its skin, as the fur is in some request; but the mischief it does him is not by any means counterbalanced by the value of its hide. It is a very determined animal, and when attacked defends itself vigorously, proving more than a match for a dog. The length of the Glutton, without the tail, is about two feet six inches.

THE SEAL TRIBE.

The Seal tribe are amphibious animals, being fitted to live either on land or in the water; though, like the Otter, they are quadrupeds, and have claws.

THE COMMON SEAL inhabits the northern coast of Europe, and is not unfrequently found along the Scottish coast, where seal-hunting is a favorite amusement. The young are taken by



Seal.

stretching nets across the narrow straits which they frequent, but the older and stronger animals are shot or knocked down with clubs when they attempt to scramble into the

sea, as a blow on the nose instantly disables them. The fore-feet of the Seal are used as fins, and the two hinder feet almost as the tail of a fish, to assist and direct its course. On land the movements of this animal are very clumsy; it shuffles along by means of its fore feet, or rather paddles, and drags its hind feet after it. This seal, when taken young, is easily tamed. Edmonston gives an amusing account of a seal named Finna, which he kept for about six months. "We had her carried down daily in a handbarrow to the sea-side, where an old excavation admitting the salt water was abundantly roomy and deep for her recreation and our

observation. After sporting and diving for some time, she would come ashore, and seemed perfectly to understand the use of the barrow. Often she tried to waddle from the house to the water, or from the latter to her apartment; but finding this fatiguing, and seeing preparations by her chairmen, she would of her own accord mount her palanquin, and thus be carried as composedly as any Hindoo princess." This interesting animal, after living in the house for about six months, at last was decoyed away by some wild seals, and did not return again. A young seal was tamed by the guard of a small island in the Frith of Forth above Edinburgh. It seemed quite to consider itself one of the party, would accompany their boat across the water, and when the vessel was made fast, it used to take its station inside, and watch until the owners returned. It had the playful manners of a water-dog, and would snatch a stick from its master's hand and dash into the sea with it, where it would toss and tumble about, sometimes approaching close to the shore, and swimming off again when its master attempted to grasp the stick, but it invariably brought back whatever it had taken. It would also bring fish out of the water and give them to its owners.

THE ELEPHANT SEAL inhabits the Atlantic, Pacific, and Southern Oceans. It is very much larger than the Common Seal, being from twenty to thirty feet long. It derives its name from the long snout, something like the proboscis of the elephant, or rather the tapir, which it thrusts forward when angry, and snorts loudly. Only the males have this proboscis, and they do not attain it until they are three years old. Although its appearance is very formidable, it does not attempt to attack men; but if it cannot frighten them by opening its mouth and displaying its teeth, it makes off towards the water, but with great deliberation, as when in good condition it is so fat that its body trembles like a mass of jelly, and will furnish seventy gallons of oil. This oil is the principal object of the South Pacific seal fisheries: but the skin of this seal is also very valuable for its strength, and is used in making harness. The seal skin is often used as fur. It is a migratory animal, and changes its residence several times in the year, the first

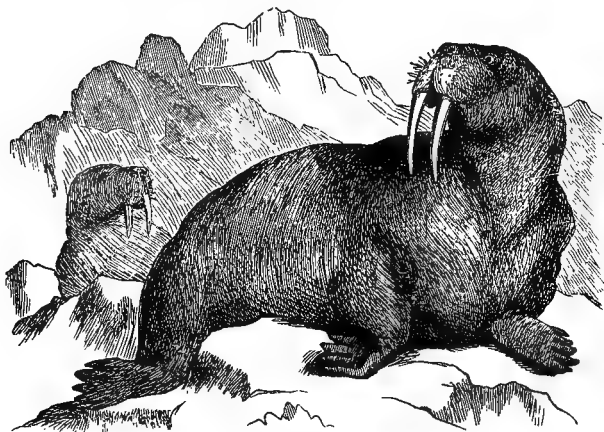
migration taking place in June. There are many seals known, among which are the Sea Leopard, a spotted species; the Harp Seal, so called because the markings on its back something resemble a lyre; and the Sea Lion.

THE BOTTLE-NOSED SEAL is usually found in the seas around New Zealand, the island of Juan Fernandez, and the Falkland Islands. The male of this species measures from fifteen to twenty feet in length, and differs from the female in having a large snout, which projects five or six inches beyond the extremity of the upper jaw, and which, when irritated, it inflates, so as to give to it the appearance of an arched or hooked nose. The quantity of blubber contained between the skin and the flesh is so great, it being at least a foot in depth in the largest, that the animal, when in motion, looks like an immense skin filled with oil. This quantity of fat probably contributes to render the Bottle-nosed Seal of so lethargic a disposition, that it cannot readily be compelled to move, and, consequently, is easily killed. It divides its time almost equally between the land and sea, and lives in herds, each of which seems to be under the direction of a large male, which seamen term the Bashaw, from the circumstance of his driving away females from the other males, and appropriating them to himself. At a distance from each herd, some of the males are placed as sentinels, and by them the alarm is loudly given in case of danger.

THE WALRUS inhabits the northern seas, but has been known to visit the British coast. Three instances of this have happened, one in 1817, one in 1825 at the Orkney Isles, and a third in 1839 at the mouth of the Severn. The most remarkable point in the Walrus is the great length of two of its upper teeth, which extend downwards for nearly two feet, and resemble the tusks of the elephant. They furnish very fine ivory, and are extensively used by dentists in making artificial teeth, as teeth made from them remain white much longer than those made from the tusks of elephants. These tusks are used by the Walrus for climbing the rocks or heaps of ice, and also for digging up the sea-weeds on which the animal mostly subsists. It will also eat shrimps and young seals.

The Walrus is often hunted for the sake of its oil, its flesh, its skin, and its teeth. It is generally found in troops, and if one is wounded, its companions rush to its rescue and attack the enemy with their sharp tusks, which they have been known to drive through the bottom of a boat. Their skin is so strong and slippery that it is very difficult to drive the harpoon through it, and even a sharp weapon frequently glides off without injuring the animal. The great enemy of the walrus is the polar bear, who does not always venture on an open battle, as when a combat takes place, the walrus defends himself most vigorously with his curved tusks, and often inflicts fearful gashes on the bear, forcing it to abandon the contest.

The head of this animal is very small in proportion to the remainder of its body, and often deceives people as to its size, which is difficult to ascertain without examination. The stuffed specimen in the British Museum, although in bad preservation, gives a tolerable idea of the animal. The expression of its countenance is very ferocious, principally on account of the enormous size of the upper lip and the thick bristles with which it is covered. The length of the Walrus is about fifteen or sixteen feet, and it yields from twenty to thirty gallons of excellent oil.



The Walrus.

CHAPTER V

DIVISION I.—VERTEBRATES,

CLASS I.—MAMMALS.

ORDER III.—QUADRUPEDS.

*Sub-Order.—Clawed Quadrupeds.*INSECT-EATING, GNAWING, TOOTHLESS, AND POUCHED
QUADRUPEDS.

THE INSECTIVORA are generally small animals, and so called because they feed principally upon insects. Many of them pass the winter in a state of lethargy, and during summer they lead a secluded, nocturnal, or subterranean life. Their limbs are short, and their motions very feeble. Among the most worthy of notice are the hedgehog, the shrew-mouse, and the mole.

THE RODENTIA, or *Gnawers*, are distinguished by the possession of two large incisive teeth in the centre of each jaw, and by the absence of canine teeth. There is a wide space between the incisors and the molars, which last are broad, and evidently calculated for the mastication of vegetable food. This arrangement of their teeth remarkably qualifies them for gnawing, and enables them to penetrate very solid substances; and frequently they feed upon woody fibres and the bark of roots and trees. There is an additional circumstance in the structure of their incisive teeth, which adapts them to the use for which they are intended. They are furnished with enamel only upon their front surface, so that the back part, being merely bone, is by gnawing worn away faster than that in front, and of course the front edge is kept sharp and fit for cutting. To remedy the loss of substance, which is necessarily continuous, there is a provision by which a constant growth takes place from the root; so that if one of these teeth is lost by acci-

dent, that which corresponds to it in the opposite jaw, being no longer worn away by use, increases to a great length. Their feet are furnished with toes and nails, and their hind legs are stronger and longer than their fore legs; so that frequently they leap better than they run. Of this order, among others, are the beaver, the squirrel, the dormouse, the marmot, the hamster, the mouse and rat, the jerboa, the various species of hare and rabbit, and the porcupine.

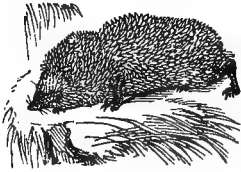
THE EDENTATA, or toothless animals, so called from the absence of the incisive, and sometimes also of the canine and grinding teeth. Their toes are terminated by very large, thick, and strong claws, which approach in some degree to the nature of hoofs. The animals of this order are likewise remarkable for a great degree of torpor, listlessness, and indisposition to motion; but some more than others. The sloth, the ant-eater, and armadillo, are among them; and of each of these there are several species.

THE MARSUPIALA, or pouched animals, have usually been distributed among those orders of the class Mammalia, to which they bear, in some particulars, the closest resemblance. Thus the Kangaroo has been enumerated among the Rodentia, because it resembles them in its teeth, and the length and strength of its hind legs. The Opossum has been ranked among the Carnivora, and the Ornithorhynchus among the Edentata for a similar reason. But so peculiar and remarkable is the structure of these animals, and so singular their mode of nourishing their young, that it will be far more intelligible and interesting to the student of natural history, to have them placed together, and described as belonging to a single order.

INSECT-EATERS.

THE HEDGEHOG, the size of which varies from six to ten inches, has the power of defending itself from an enemy without combating him, and of annoying without attacking him. Possessed of little strength, and of no agility by which it might escape its foes, it has received from Nature a prickly armor, with a facility of rolling itself up in a ball, and of presenting from every part

of its body a poignant weapon of defence. Even from its fear this animal obtains another engine of security; the smell of its



Hedgehog.

urine, which, when attacked, it generally sheds, being sufficient to disgust its enemy with the contest, and to keep him at a distance. Thus the generality of dogs are content with barking at the Hedgehog, when it falls in their way, without discovering any inclination to seize it. Of these, however, there are some which, like the fox, have had the

address to master it, though of the martin, the polecat, the ferret, the weasel, or any of the birds of prey, it has no dread.

When at large in the country, they are generally found in woods, under the trunks of old trees, as also in the clefts of rocks. It is probable that they do not climb up trees, as some naturalists have affirmed, nor that they make use of their prickles to carry off the fruit; it is with their mouth they seize it; and though they are very numerous in our forests, observers have never seen one upon a tree. They always remain at the foot, in some hollow space, or under moss. They remain in a state of inactivity all day; they only venture abroad by night, and seldom approach human habitations. They sleep during the winter; and therefore everything that has been said of their laying up provisions for that season must be false. They at no time eat much, and can subsist very long without any food whatever. Hedgehogs are occasionally eaten, and their flesh is said to be delicate food; their skin is not any longer converted to the smallest use, though the ancients used it for the purpose of a clothes-brush.

The Hedgehog may be rendered domestic, and in that state is very useful in destroying cockroaches and beetles, which he pursues and devours with great activity. He is believed also to destroy mice nearly if not quite as well as a cat. A Hedgehog belonging to the proprietor of an inn at Felton, in Northumberland, was taught to perform perfectly the duty of a turnspit dog. It ran familiarly about the house, and was very obedient.

A full grown Hedgehog was once put into a small yard, in which was a border of shrubs and annuals. In the course of a few days he formed, beneath a small holly tree, a hole in the earth sufficiently large to receive his body. After a while a small shed was built for him in the corner of the yard, and filled with straw; but the animal would not quit its former situation until it was covered with a stone. He then took possession of the shed, and every morning carried leaves from a distant part of the border, to stop its mouth. His principal food was raw meat and mice. Of the latter he would eat six at a time, but never more; and, although these were thrown to him dead, he bit them all in the neck before he began to eat any. He would also eat snails with their shells; but would leave anything for milk, which he lapped exceedingly slow. To this, even if set six or eight yards distant from his shed, he would almost always come out half an hour before his usual time. If the person who usually fed him neglected to do so, he would follow him along the yard; and if the door was open, he would go into the house. If meat was put near the mouth of his shed in the daytime, he would sometimes pull it in and eat it. As the weather became colder, he carried more leaves into his shed; and sometimes he would not come out for two or three days successively. About the end of November he died; from want of food, as was supposed, but most probably from the severity of the weather.

THE SHREW-MOUSE is very like the common mouse, but is easily distinguished from it by the length of the nose, which is used for grubbing up the earth in search of earth-worms and insects. A peculiar scent is diffused from these animals, which prevents the cat from eating them, although she will readily destroy them. Many species of shrews are known, inhabiting various countries. There are, besides the common species, the Oared and the Water Shrew. The formation of their hair, as seen under a powerful microscope, is most singular, and differs from the hair of most other animals by suddenly diminishing in thickness, and, after an interval, recovering its former size.

This is one of the numerous animals that have suffered by

false reports, and been treated with great cruelty on account of those fables. Rustics formerly believed that the poor little harmless creature paralyzed their cattle by running over them, and that the only way to cure the diseased animal was to place a bough of shrew-ash on the injured part. The shrew-ash was made by boring a hole into an ash-tree, and then plugging up in the hole a living shrew-mouse. By the same process of reasoning a shrew cut in half, and placed on a wound supposed to be caused by its bite, was considered a certain remedy.

THE WATER SHREW frequents brooks and clear running ditches, in the banks of which it lives. It swims and dives with great ease, and when under water appears as if it had been speckled over its entire surface with silver, from the bubbles of air which adhere to its fur. It eats the grubs of various aquatic insects, digging them out of the muddy banks with its snout.

THE MOLE, without being blind, has such small eyes, and these so concealed, that it was formerly supposed to be able to make



Mole.

little use of the sense of sight; but it is now known that its eyes possess all the qualities necessary to distinct vision. It enjoys also

the senses of hearing and feeling in an eminent degree. Its skin is as soft as silk; and its little paws, which are furnished with five claws, are very different from those of other animals, and almost like the hands of a human being. Proportioned to the size of its body, its strength is great; it possesses the mild habitudes of repose and of solitude; the art of securing itself, of forming, instantaneously as it were, an asylum to itself, or extending it, and of obtaining, without the necessity of relinquishing it, an abundant subsistence.

The mole shuts up the entry to its retreat, which it seldom deserts, unless forced to it by heavy rains in summer. It is fond of cultivated grounds, and is never to be found in those which are either muddy, hard, compact, or stony. It requires a soft soil, well supplied with esculent roots, and with insects and worms, of which, indeed, its principal nourishment consists. In the skinning of worms, which they always do before they eat them, they display much expertness; stripping off the skin from end to end, and squeezing out the contents of the body.

As these animals very seldom come above ground, they have but few enemies; and very readily evade the pursuit of animals swifter and stronger than themselves. The chief calamity which befalls them is an inundation; and when this happens, they are seen in numbers attempting to save themselves by swimming, and using every effort to reach the higher grounds. The greatest part, however, perish, as well as their young, which remain in the holes behind. Were it not for such accidents, from their great fecundity, they would become exceedingly troublesome. They generally have four or five at a time; and it is easy to distinguish among other Mole hills, that in which the female has brought forth her young. These are made with much greater art than the rest; and are usually larger and more elevated. It is probable they produce oftener than once a year. Indeed it is certain, that newborn moles are found from the month of April to the month of August—a circumstance which, however, may be owing to their having been engendered and brought forth sooner or later in the year. It is a good swimmer, and can pass from bank to bank, or

from the shore to an island, and when the fields are inundated by floods, it can save itself by swimming.

The construction of the mole's habitation is very singular and interesting. Each mole has its own habitation and hunting ground, and will not permit strangers to trespass upon its preserves, which it guards, not by "man-traps and spring-guns," but by its own claws and teeth. In order to construct a fortress, the mole selects a secure place, as the foot of a tree, or the side of a high bank. It then throws up a heap of earth, which it presses firmly together, as within this mound its fortress has to be made. It commences by running a circular gallery near the summit of the mound, and another larger one near the bottom. These two galleries it connects by five descending passages. In the very centre of the mound, and at the level of the ground, it then digs a circular hole, which it connects with the upper gallery by three ascending passages. Lastly, it makes a number of passages from the lower gallery, and connects the circular chamber with the largest of them, or high road, by a passage that first bends downwards, and then rises into the high road a little outside the large gallery. In the circular chamber the mole sleeps, and can escape into the high road either by the upper gallery or by the road from the bottom of its dormitory.

Moles vary in color, the usual tint being a very deep brown, almost black, but they have been seen of an orange color, and a white variety is not uncommon. Those who have watched its habits state that it alternately works and rests at intervals of three hours. There are several moles known,—the Shrew Mole, the Changeable Mole, the Cape Mole, and the Star-nosed Mole, are the most conspicuous.

G N A W E R S .

THE BLACK RAT.—Under the general name of Rat, several species of small animals have been comprised. The first of these, known commonly by the name of the *Black Rat*, is indigenous in England, carnivorous, and even, if the expression is allowable, *omnivorous*. Hard substances, however, it prefers to soft ones: it

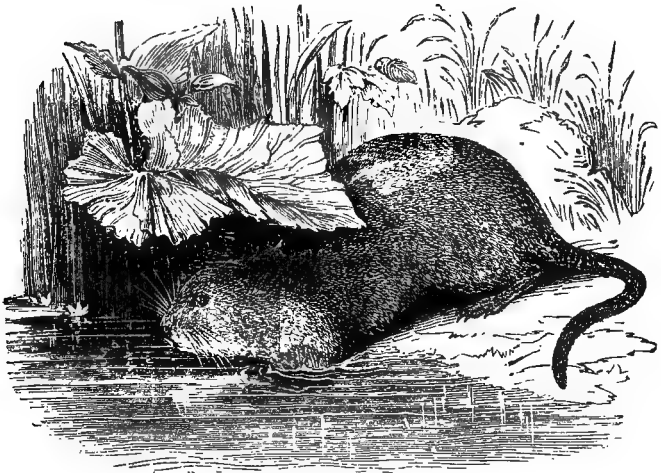
devours wool, stuffs, and furniture of all sorts; eats through wood, makes hiding-places in walls, thence issues in search of prey, and frequently returns with as much as it is able to drag along with it, forming, especially when it has young ones to provide for, a magazine of the whole. The females bring forth several times in the year, though mostly in the summer season; and they usually produce five or six at a birth.

In defiance of the cats, and notwithstanding poison, traps, and every other approved method that is used to destroy these creatures, they multiply so fast as frequently to do considerable damage. On board a man-of-war they have been known to consume a hundred weight of biscuits daily, and when, to destroy them, the ship has been smoked between decks, six hampers a day have for some time been filled with their carcasses. The Isle of France was once abandoned on account of their immense swarms, and, even now, they are a severe scourge to it.

THE BROWN RAT, sometimes called the Norway Rat, is the species usually found in the United States. It was many years since imported into this country, and from its superior size, strength, and ferocity, has so completely established itself, and expelled the original Black Rat, that it is very difficult indeed to find a Black Rat in any part of the United States. Waterton's sympathies are much excited in favor of the original rat, and his anger is great against the invader. He says of the Brown Rat:—"Its rapacity knows no bounds, while its increase is prodigious, beyond all belief. But the most singular part of its history is, that it has nearly worried every individual of the original rat out of Great Britain. So scarce have these last-mentioned animals become, that in all my life I have never seen but one single solitary specimen. It was sent, some few years ago, to Nostell Priory, in a cage, from Bristol, and I received an invitation from Mr. Arthur Strickland, who was on a visit there, to go and see it. Whilst I was looking at the little native prisoner in its cage, I could not help exclaiming, 'Poor injured Briton! hard, indeed, has been the fate of thy family! in another generation, at furthest, it will probably sink down to the dust for ever!'"

The same amusing naturalist, being considerably annoyed by the depredations on his provisions, and the unceasing clatter that they kept up behind the panels of his sitting-room, after trying various plans to extirpate them, at last thought of a method, rich in the same humor with which most of his actions are tinged, and as efficacious in its operation as amusing in its idea:—"Having caught one of them in a box trap, I dipped its hinder parts into warm tar, and then turned it loose behind the hollow plinth. The others, seeing it in this condition, and smelling the tar all along the run through which it had gone, thought it most prudent to take themselves off: and thus, for some months after this experiment, I could sit and read in peace, free from the hated noise of rats. On moving the plinth at a subsequent period, we found that they had actually gnawed away the corner of a peculiarly hard-burnt brick, which had obstructed their thoroughfare."

THE WATER-RAT is a little animal, about the size of the



Water-Rat.

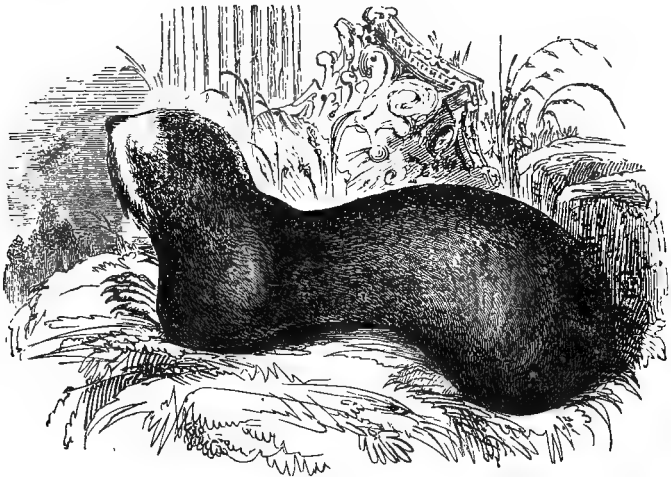
black rat, but in its nature and habits rather resembling the otter than the rat. Like the otter, it frequents the fresh waters, and is

generally found on the borders of rivers, rivulets, and ponds; like that creature, too, it seldom feeds but upon fish, or the spawn of fish, though sometimes it eats frogs, water-insects, and even roots and herbs. This animal is not web-footed; but though every toe of its feet is separated, it swims with facility, keeps itself a long time above water, and thence carries off its prey, in order to eat it when got to land, either on the grass or in its hole.

THE HAMSTER RAT is a native of parts of Germany. It is a terrible pest there, as it not only devours the corn, etc., in the summer, but lays up a large store for the winter. It is a most furious little animal, and will attack a man or a horse, and even a wagon wheel if it approaches too near the spot which the Hamster considers its own property. Rats, mice, lizards, birds, and even its weaker brethren, are eaten by this ravenous little animal. It lives in holes underground, and to escape attack has several passages from its chamber leading in different directions. The skin is of some value, and the hunter who spears it usually opens its granary for the sake of its store, which is far from being inconsiderable, a hundredweight of beans having been found in one granary.

THE MOLE RAT. — By Linnæus the mole rat is designated *mus typhlus*. Above it is brown, below dusky. It is not altogether blind, but its eyes are very minute, and placed under the skin. Very little light is admitted, but at the same time as much as the wants of the creature require, generally remaining underneath the surface of the earth. One celebrated traveller, Oliver, observed the blind rat in Asia Minor, Syria, Mesopotamia, and Persia; and another celebrated traveller, Pallas, found it in Southern Russia, between the Tanais and the Volga. As to its habits, the following observations are worthy of notice. It is gregarious, and lives underground like the mole. Its numerous and winding passages are not much below the surface of the earth, but considerably deeper are those commodious recesses where it reposes itself in complete security from the external elements. It is most attached to fertile level grounds. It entirely subsists on roots, and therefore seriously injures every green crop that comes in its way

It moves quickly, irregularly, and abruptly. In the morning it sometimes quits its hole, to bask in the sun. If disturbed, it in-



Mole Rat.

stantly takes refuge under the surface, burrowing with great agility, and often in a perpendicular direction. It has the peculiar faculty of running backwards with great facility, carrying its head in an erect posture, stopping at the least noise, listening attentively, and when attacked, biting severely. It is singular, when irritated, it utters a snorting sound, and in a very menacing manner gnashes its teeth.

THE MOUSE is an animal smaller than the rat, as also more numerous, and more generally diffused. Its instinct, its temperament, its disposition is the same; nor does it materially differ from the rat, but by its weakness, and the habits which it contracts from that circumstance. By nature timid, by necessity familiar, its fears and its wants are the sole springs of its actions. It never leaves its hiding-place but to seek for food; nor does it, like the rat, go from one house to another, unless forced to it, or commit by any means so much mischief. When viewed without the

absurd disgust and apprehension which usually accompanies, or is affected at the sight of it, the mouse is a beautiful creature; its skin is sleek and soft, its eyes bright and lively, all its limbs are formed with exquisite delicacy, and its motions are smart and active. Though one of the most timid of creatures, the mouse may be taught to repose confidence in mankind, and will quit its place of refuge to receive food. Some few of this species are of a pure white color, with large red eyes; but whether they be a permanent kind, or only an accidental variety, cannot well be determined.

But for its immense fecundity, the species of the mouse could not subsist. Even in mouse-traps they have been known to bring forth. They produce at all seasons, and several times in the year. Their usual number at a birth is five or six; and these, in less than fifteen days, attain growth and strength sufficient to run about and shift for themselves. As in these respects they soon attain perfection, so the duration of their life must be very short; a circumstance which cannot but heighten our idea of their prodigious multiplication.

THE LONG-TAILED FIELD MOUSE is smaller than the rat, but larger than the common mouse, and does not live in houses. It is remarkable for the largeness and prominence of its eyes; it differs likewise both from the rat and the mouse in the color of its skin, which, while it is tolerably white under the belly, is of a reddish brown upon the back. The species is generally and abundantly diffused.

It appears that they are a long time in attaining their full growth, as they vary considerably in size. The largest are rather more than four inches in length, from the tip of the nose to the insertion of the tail; and the smallest, which appear to be full grown as well as the others, are an inch shorter. As there are found many of different intermediate sizes, however, there is no room to doubt but that the larger and the smaller are all of the same species.

These creatures are fond of dry and elevated grounds. In woods, and in the fields adjoining to them, they are to be found in

great numbers. They conceal themselves in holes, which they either find already made, or which they make for themselves, under bushes, or the trunks of hollow trees. In these they amass so prodigious a quantity of acorns, nuts, etc., that in one single hole there has been found a bushel at a time; and this provision instead of being proportioned to the wants of the animal, is only so to the capacity of the place allotted for its reception. These holes are generally more than a foot under ground, and often divided into two cells, of which the one serves for a habitation for itself and its young ones, and the other for a granary.

THE SHORT-TAILED FIELD MOUSE is still more common, more generally diffused than the long-tailed kind, and is found



Short-tailed Field Mice.

almost everywhere; in woods, in meadows, and even in gardens. It is remarkable for the thickness of its head, and the shortness of its tail, which is not above an inch in length. It forms holes in the earth, where it hoards up corn, nuts, and acorns; though the former of these it seems to prefer to every other kind of aliment. About the month of July, when the corn begins to ripen,

they flock together from all sides, and frequently do great damage, by cutting the stalk, in order to come at the ear. In autumn and winter, the greater part of them withdraw into the woods, where they find beech-mast, nuts, and acorns. Some years they appear in such great numbers, that they would destroy everything, were they to subsist for any length of time. For want of other food, however, they often destroy and eat one another, and are themselves the usual prey of the fox, the wild-cat, the marten, the weasel, and the long-tailed field-mouse.

THE BEAVER.—North America is the principal country where the Beaver is found, but it is also common on the Euphrates, and along some of the larger European rivers, as the Rhone and the Danube. In former years, when the wolf and bear inhabited England, the Beaver followed its architectural pursuits along the rivers; but it has not been seen there since 1188.

The houses of the Beaver are built of mud, stones, and sticks. They are placed in a stream, and their entrance is always below the surface. As a severe frost would freeze up their doors, it is necessary to make the stream deep enough to prevent the frost from reaching the entrances. This object is attained by building a dam across the river, to keep back the water until it is sufficiently deep for the beaver's purposes. The dam is made of branches which the Beaver cuts down with its strong, sharp teeth, and mud and stones worked in among the branches. The beavers throw these branches into the water, and sink them to the bottom by means of stones, and by continually throwing in fresh supplies a strong embankment is soon made.



Beaver.

As many beavers live together in one society, the formation of a dam does not take very long. By their united efforts they rapidly fell even large trees, by gnawing them round the trunk, and always taking care to make them fall towards the water, so that they can transport the logs easily. The mud and stones used

in their embankments are not carried on their tails, as some say, nor do the beavers use their tails as trowels for laying on the mud; the fact being that the stones and mud are carried between their chin and fore-paws, and the mistake respecting the tail is evidently caused by the slap that beavers give with that member when they dive. In order that their pond may not be too deep, they always leave an opening in the dam to let the water escape when it rises above a certain height. They cut most of their food in the summer, taking care to choose trees above their houses, so that the stream floats them down to the place where they wish to use them. They also lay up stores of food for the winter, by cutting a number of green branches and sinking them near the door of their habitations, where they are held firm by stones laid on the summit of the heap. During the severe winter, their mud-built houses freeze quite hard, and prevent the wolverine, their greatest enemy except man, from breaking through and devouring the inmates. Every year the beavers lay a fresh coating of mud upon their houses, so that after the lapse of a few years the walls of the house are several feet in thickness. Many of the houses are built close together, but no two families can communicate with each other, except by diving below the walls and rising inside their neighbors' houses.

The fur of the Beaver is exceedingly valuable, especially for the manufacture of hats, and is greatly sought after. The hunting season is in winter, when the beavers are quietly in their houses. The hunters, armed with spears, etc., break the tops of the houses. The alarmed beavers instantly rush out and pass under the ice to certain hiding-places in the bank. The hunter then discovers the position of the hole in the bank by the sound of his spear struck against the ice; he then breaks a hole and spears the animal in its place of fancied security. A substance called castor was formerly obtained from the Beaver and much used in medicine, but is now discarded.

The fur of the Beaver, like that of many other animals, consists of a fine wool intermixed with long and stiff hairs. The hairs are useless, but the peculiar construction of the fur causes

it to penetrate and fix itself into the felt which forms the body of a hat. In making the hat, the only method required to fasten the fur into the felt is to knead fur and felt together. The hair is toothed on its surfaces, and makes its way into the felt, just as an awn of barley will travel all over the body if placed up the sleeve. The length of the Beaver is about three feet and a half.

When in captivity the Beaver soon becomes tame, and will industriously build dams across the corner of a room with brushes, boots, fire-irons, books, or anything it can find. When its edifice is finished it sits in the centre, apparently satisfied that it has made a beautiful structure to dam up the river — a proof that the ingenuity of the Beaver is not caused by reason, but by instinct.

THE COMMON PORCUPINE is found in Africa, Tartary, Persia, India, and some parts of Europe. It lives in holes which it digs in the ground, and only comes forth at night in order to feed. It eats vegetable substances only, such as roots, bark, etc. The array of spines or quills with which this animal is covered forms its principal means of defence. If it cannot escape, it suddenly stops, erects all its quills, and runs backwards against

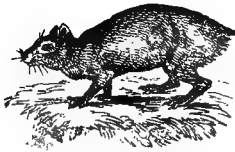


Porcupine.

its adversary, striking the quills against him by the weight of its body. Occasionally a looser quill than usual remains in the wound or falls on the ground, which evidently gave rise to the foolish error that the Porcupine could dart its weapons at its adversary from a distance. There are two kinds of these quills, — one kind long and curved, the other short, thick, and pointed. These last are the weapons of defence, as the former are too slender to do much service. When the Porcupine walks, its quills make a kind of rustling sound, caused principally by those arranged on the tail, which are large, hollow, and supported on long slender stalks. The American Indians use the quills extracted from the *Canada Porcupine*, a species living on trees, for ornamenting various parts of their dress, especially their mocassins or skin shoes. In Eng-

land the quills are much used by anglers for making fine floats. The length of the Porcupine is about two feet, and its spines or quills are from six to fourteen inches long.

THE AGOUTI is about the size of a hare, and has been considered, erroneously, as a kind of rabbit, or large rat, by the generality of nomenclators. As it has the hair of a hog, so also it has the voracious appetite of that animal. It eats indiscriminately of all things; and when satiated, it hides the remainder, like the dog or the fox, for a future occasion. It does not, like the rabbit, dig a hole in the ground, but burrows in the holes of trees. Its ordinary food consists of the roots of the country, potatoes, yams, and such fruits as fall from the trees in autumn. It



The Agouti.

uses its fore paws like the squirrel, to carry its food to its mouth; and as its hind feet are longer than the fore ones, it runs very swiftly upon plain ground, or up a hill, but upon a descent it is in danger of falling. Its sight is excellent; its hearing equals that of any other animal; and whenever it is whistled to, it stops to hearken. The flesh is dressed like that of a sucking pig, and of such as are well fed, is tolerable food, though it has always a peculiar taste, and is rather tough.

It is hunted by dogs; and whenever it goes into a sugar-ground, where the canes cover the place, it is easily overtaken; for it is embarrassed every step it takes, so that a man may easily come up with it, and kill it without any other assistance than a stick. When in the open country, it usually runs with great swiftness before the dogs until it gains its retreat, within which it continues to hide, and nothing but filling the hole with smoke can force it out. For this purpose the hunter burns faggots or straw at the entrance, and conducts the smoke in such a manner that it fills the whole cavity. While this is doing, the poor little animal seems sensible of its danger, begs for quarter with a most plaintive cry, but seldom quits its hole till the utmost extremity.

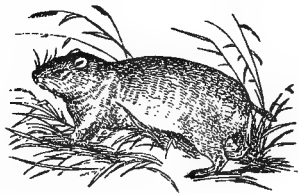
The Agouti seems to be a native of the south parts of Ame-

rica; nor is at all known in the Old World. It is, however, very common in Brazil, Guiana, St. Domingo, and all the islands around. To the cold and temperate regions of America this animal is an utter stranger.

THE CAPYBARA, or *Chiguira* is the largest of all the Gnawers. At first sight it looks very like a pig, and its skin is covered thinly with hairs like bristles, which add to the resemblance. It inhabits the borders of lakes and rivers in many parts of Southern America. During the day, it hides among the thick herbage of the banks, only wandering forth to feed at night, but when alarmed, it instantly makes for the water, and escapes by diving. It is hunted for the sake of its flesh, which is said to be remarkably good. The Jaguar appears to be of the same opinion, for he is the most terrible enemy of this creature, destroying immense numbers. The food of the Capybara consists of grass, vegetables, and fruits. Its length is about three feet six inches.

THE GUINEA-PIG, or *Cavy* was originally brought from South America, and is frequently domesticated in other countries. Its beauty is its only recommendation, as it shows little intelligence, and is never used for food. Children, however, and particularly schoolboys, are fond of keeping Guinea-pigs, as they are wonderfully prolific, easy to manage, and do not make much noise. They are popularly supposed to keep off rats, and are therefore usually patronized in connection with rabbit-hutches.

THE MARMOT.—Among the hare kind is the Marmot, which naturalists have placed either among the hare kind or the rat kind, as it suited their respective systems. In fact, it bears no great resemblance to either: but of the two it approaches much nearer the hare, as well in the make of its head as in its size, and particularly in its chewing the cud, which alone is sufficient to determine our choice in giving it its present situation. The Marmot is chiefly a native of the Alps; but is also found in

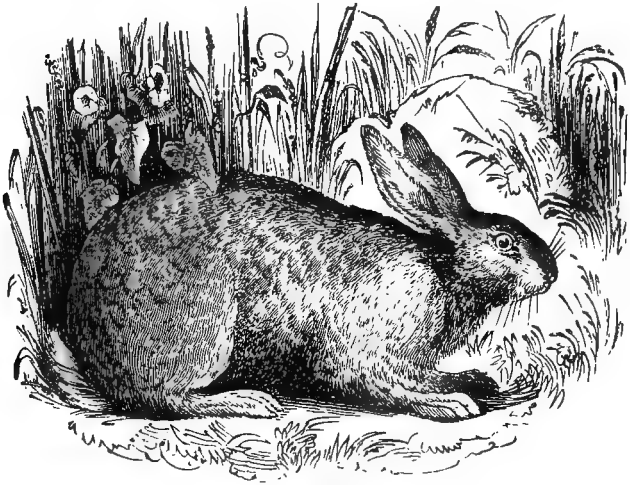


The Marmot of Poland,

Poland, Siberia, and Canada, where it is known under different names. When taken young it is tamed more easily than any other wild animal, and almost as perfectly as any of those that are domestic. It is readily taught to dance, to wield a cudgel, and to obey the voice of its master. Like the cat, it has an antipathy to the dog; and when it becomes familiar to the family, and is sure of being supported by its master, it attacks and bites even the largest mastiff. From its squat, muscular make, it has great strength joined to great agility. It has four large cutting teeth, like all those of the hare kind, but it uses them to much more advantage, since in this animal they are very formidable weapons of defence. However, it is in general a very inoffensive animal; and, except its enmity to dogs, seems to live in friendship with every creature, unless when provoked. If not prevented, it is very apt to gnaw the furniture of a house, and even to make holes through strong wooden partitions; hence, perhaps, it has been compared to the rat. As its legs are very short, and made somewhat like those of a bear, it is often seen sitting up, and even walking on its hind legs in like manner; but with the fore-paws it feeds itself in the manner of a squirrel. Like all of the hare kind, it runs much swifter up hill than down; it climbs trees with great ease, and runs up the cliffs of rocks or the contiguous walls of houses with great facility. It is ludicrously said that the Savoyards, who are the only chimney-sweepers of Paris, have learned this art from the Marmot, which is bred in the same country.

HARES are divided, by hunters, into mountain and measled hares. The former are more swift, vigorous, and have the flesh better tasted; the latter chiefly frequent the marshes, and when hunted keep among low grounds; their flesh is moist, white, and flabby. When the male and female keep one particular spot, they will not suffer any strange hare to make its form in the same quarter, so that it is usually said, that the more you hunt, the more hares you shall have; for, having killed one hare, others come and take possession of its form. Many of these animals are found to live in woods and thickets, but they are naturally fonder of the open country, and are constrained only by fear, to take

shelter in places that afford them neither a warm sun, nor an agreeable pasture. When full grown it is larger than the rabbit, and exceedingly like that animal, but its color is slightly different, and the black spot on the extremity of its ears is a simple method of distinguishing it. The hare does not burrow like the rabbit, but makes a kind of nest of grass and other materials. In this nest, called a "form," the hare lies, crouching to the ground, its ears laid along its back, and, trusting to its concealment, it will often

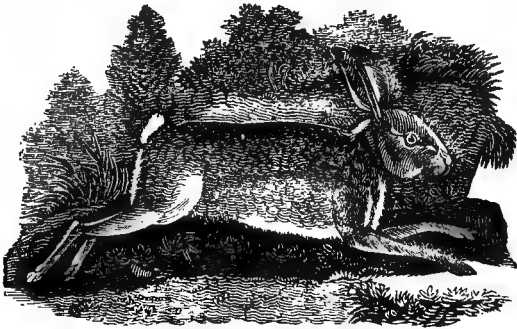


The Hare.

remain quiet until the foot of an intruder almost touches it. Many people can distinguish it when thus hidden by the sparkle of its eye. The soil and climate have their influence upon this animal as well as on most others. In the countries bordering on the north pole, they become white in winter, and are often seen in great troops of four or five hundred, running along the banks of the river Irtish, or the Jenisca, and are white as the snow they tread on. They are caught in traps for the sake of their skins.

RABBITS of the domestic breed, like all other animals that are under the protection of man, are of various colors, white,

brown, black, and mouse-color. The black are the most scarce; the brown, white, and mouse-color are in greater plenty. Most of the wild rabbits are of a brown, and it is the color which prevails among the species; for in every nest of rabbits, whether the parent be black or white, there are some brown ones found of the number. But, in England, there are many warrens stocked with the mouse-colored kinds, which, some say, came originally from an island in the river Humber, and which still continue their original color, after a great number of successive generations. A gentleman, who bred up tame rabbits for his amusement, gives



Rabbit.

the following account of their production: "I began," says he, "by having but one male and female only; the male was entirely white, and the female brown; but in their posterity the number of the brown by far exceeded those of any other color: there were some white, some parti-colored, and some black. It is surprising how much the descendants were submissive and obedient to their common parent; he was easily distinguished from the rest by his superior whiteness; and however numerous the other males were, this kept them all in subjection. Whenever they quarrelled among each other, either for their females or provisions, as soon as he heard the noise he ran up to them with all despatch, and, upon his appearance, all was instantly reduced to peace and order. If

he caught any of them in the fact, he instantly punished them as an example to the rest. Another instance of his superiority was, that having accustomed them to come to me with the call of a whistle, the instant this signal was given, I saw him marshalling them up, leading them the foremost, and then suffering them all to file off before him."

THE CHINCHILLA lives in society like the rabbit, and resides in burrows dug in the ground. Its food is entirely vegetable, and principally consists of bulbous roots. In captivity it is quiet and inoffensive, but seems to betray no particular attachment to its keeper; neither does it seem playful. Its tail, covered with long bushy hairs, is usually held turned up over its back, like that of the squirrel, and probably for the same reason. This pretty little animal is an inhabitant of the valleys in the mountain districts of South America. In such situations the cold is often very intense; but the long soft fur of the Chinchilla forms an effectual protection against the frosts. The fur is extensively used for clothing, and celebrated for its soft and warm texture. Numbers of these animals are annually destroyed for the sake of their skins. Coquimbo appears to be the place where they are taken in the greatest numbers. From the various specimens of fur sent to the United States, it would appear that there are two species of Chinchilla, but it is not quite certain. The length of the Chinchilla is about nine inches, exclusive of its tail, which measures about five.

THE SQUIRREL is a beautiful little animal, which is but half savage; and which, from the gentleness and innocence of its manners, deserves our protection. It is neither carnivorous nor hurtful: its usual food is fruits, nuts, and acorns; it is cleanly, nimble, active, and industrious; its eyes are sparkling, and its physiognomy marked with meaning. It generally, like the hare and rabbit, sits up on its hinder legs; and uses the fore paws as hands; these have five *claws* or *toes*, as they are called, and one of them is separated from the rest like a thumb. This animal seems to approach the nature of birds, from its lightness, and surprising agility on the tops of trees. It seldom descends to the ground, except in case of storm, but jumps from one branch to

another; feeds, in spring, on the buds and young shoots; in summer on the ripening fruits and particularly the young cones



The Squirrel.

of the pine tree. In autumn it has an extensive variety to feast upon; the acorn, the filbert, the chestnut, and the wilding. This season of plenty, however, is not spent in idle enjoyment; the provident little animal gathers at that time its provisions for the winter; and cautiously foresees the season when the forest shall be stripped of its leaves and fruitage.

Its nest is generally formed among the large branches of a great tree, where they begin to fork off into small ones. After choosing the place where the timber begins to decay, that a hollow may more easily be formed, the squirrel begins by making a kind of a level between the forks; and then bringing moss, twigs, and dry leaves, it binds them together with great art, so as to resist the most violent storm. This is covered up on all sides; and has but a single opening at top, which is just large enough to admit the little animal; and this opening is itself defended from the weather by a kind of canopy, made in the fashion of a cone, so that it throws off the rain, though never so heavy. The nest thus formed, with a very little opening above, is, nevertheless, very commodious and roomy below; soft, well knit together, and every way convenient and warm. In this retreat the little animal brings forth its young, shelters itself from the scorching heat of the sun, which

it seems to fear, and from the storms and inclemency of winter, which it is still less capable of supporting. Its provision of nuts and acorns is seldom in its nest, but in the hollows of the tree, laid up carefully together, and never touched but in cases of necessity.

THE FLYING SQUIRREL is more common in America than in Europe, where he is seldom seen, except in Russia, Norway, and Lapland. The American species uses the same food, and forms the same hoards, as the common squirrel; but the Norwegian feeds principally on the tender branches of the beech and pine trees. The latter species differs from the former principally in having its tail full of hair, rounded at the end, and its body being a fine gray on the upper part, and white on the lower; while the American has a tail tapering to a point, and is of a cinereous brown on the back, and white tinged with yellow on the belly. This little animal dwells upon trees, like the squirrel; he goes from branch to branch; and when he leaps upon another tree, his skin, which hangs loose on both sides of his body, is stretched forward by his fore legs, and backward by the hind legs, and increases the surface of his body without adding to its weight, and consequently retards his fall; so that this animal reaches, in one leap, a great distance. This motion is not like the flight of a bird, neither like the fluttering of a bat; both which motions are performed by striking the air with repeated vibrations. It is one single leap, caused by the first impulse, the motion of which is only prolonged, and lasts longer, as the body of the animal, presenting to the air greater surface, finds a greater resistance, and falls more slowly.

The Flying Squirrel is easily tamed; but it often flies; and he must be kept in a cage, or secured with a small chain. He feeds upon bread, fruit, and seeds; he is remarkably fond of the buds and shoots of the birch and pine trees. He does not seek after nuts and almonds like the squirrel. He makes a bed of leaves, in which he buries himself, and upon which he lies in the daytime, and leaves it in the night, or when pressed by hunger. As he has little agility, he becomes easily the prey of martens, and other

animals which climb up the trees; so that the species is not greatly multiplied, although they have commonly three or four young at a time.

THE GROUND OR STRIPED SQUIRREL is very numerous in the forests of North America and Northern Asia. It burrows in the ground, and makes two entrances to its habitation; that if one should be stopped up, it may have access by the other. In autumn, however, when the ground is covered with leaves, and it is warmly pursued, it has often some difficulty in discovering the entrance to its haunt, and it then displays striking signs of consternation. It is only on such occasions that it will take refuge in trees. Its hole is formed with great skill, having several branches from the principal passage, each of which is terminated by a store-house, in which its winter food is deposited: in one contained acorns, in another nuts, in a third maize, and in a fourth chestnuts, which are its favorite food, and of which it sometime collects not less than two hats full. In Siberia, ten or fifteen pounds weight of the kernels of the stone pine have been taken out of one of these hoards.

THE DORMOUSE is very common in all the warmer parts of the continent of Europe, and is sometimes found in England especially in the southern and midland counties, but it does not exactly resemble the Italian, which is red upon the back. It lives in copses and among brushwood, through which it makes its way with such rapidity that it is very difficult to capture. During the winter it lies torpid, but takes care to have a stock of food laid up, on which it feeds during the few interruptions to its slumber. A warm day in winter will usually rouse it, but during the cold weather it lies rolled up, with its tail curled round it. While in this torpid state, a sudden exposure to heat kills it, but a gentle warmth, such as holding it in the hand, rouses it without injury. It lives principally on nuts, acorns, and grain. It brings up its young in a nest composed of leaves and hay, and seems to be fond of society in its household labors, as ten or twelve nests have been seen close to each other.

THE JERBOAS are celebrated for their powers of leaping

Their long hind legs enable them to take enormous springs, during which their tails serve to balance them. Indeed, a jerboa, when deprived of its tail, is afraid to leap. At first sight the Jerboa seems to alight on its hind feet, as well as spring from them, but the fact is, that it alights on its fore feet and draws up the hind legs ready for the next leap with such rapidity that the eye can scarcely follow the movement; as has been elsewhere related of the kangaroo. The foot of the Jerboa is defended by long bristly hairs, which not only give the creature a firm hold of the ground for its spring, but also defend the foot from the burning soil on which it lives. The timidity of the Jerboa is very great, and on the slightest alarm it instantly rushes to its burrow, but if intercepted, skims away over the plain with such rapidity that it seems to fly; and when at full speed a swift greyhound can scarcely overtake it. Grain and bulbous roots are its chief food; while eating, it holds the food with its fore paws, and sits upright on its haunches, like the squirrels and marmots. The Jerboa does not bear confinement well; it always appears uneasy and distrustful; it remains hidden during the day, and even when it emerges from its concealment towards the evening, is always ready to retreat at the least alarm. There are many kinds of jerboa; the Egyptian Jerboa is rather small, being about the size of a large rat; its color is a tawny yellow.

TOOTHLESS QUADRUPEDS.

THE EDENTATA, or *Toothless Quadrupeds*, include the Ant-eaters and the Pangolins, which possess no teeth at all, and the Sloths, Armadilloes, etc., which have back teeth, of a peculiar, but imperfect structure.

There are two species of the Sloth, the *Unau*, or two-toed, which has no tail, and only two nails on the fore feet; and the *Ai*, or three-toed, which has a short tail, and three nails on each foot. These animals have neither incisive nor canine teeth; their eyes are dull and heavy; their mouths wide and thick; their fur coarse and staring, and like dried grass; their thighs seem almost disjointed from the haunch; their legs very short, and badly shaped;

they have no soles to the feet, nor toes separately movable, but only two or three claws, excessively long, and crooked downwards and backwards. Unfurnished with teeth, they cannot seize any prey, nor feed upon flesh, nor even upon vegetable food. Reduced to live on leaves and wild fruits, they take up a long time in crawling to a tree, and are still longer in climbing up to the branches. During this slow and painful labor, which sometimes lasts many days, they are obliged to support the most pressing hunger; and when, at length, one of them has accomplished its end, it fastens itself to the tree, crawls from branch to branch, and by degrees strips the whole tree of its foliage. In this manner it remains several weeks, without moistening its dry food with any liquid; and when it has consumed the store, and the tree is entirely naked, yet unable to descend, it continues on till hunger presses, and that becoming more powerful than the fear of danger or death, it drops, like a shapeless, heavy mass, to the ground, without being capable of exerting any effort to break the violence of its fall.

Mr. Waterton thus relates an adventure with one of these animals: "One day, as we were crossing the Essequibo, I saw a large two-toed sloth on the ground upon the bank; how he got there nobody could tell: the Indian said he had never surprised a sloth in such a situation before; he would hardly have come there to drink, for both above and below the place, the branches of the trees touched the water, and afforded him an easy and safe access to it. Be this as it may, though the trees were not above twenty yards from him, he could not make his way through the sand time enough to escape before we landed. As soon as we got up to him, he threw himself on his back, and defended himself in gallant style with his fore legs. 'Come, poor fellow,' said I to him, 'if thou hast got into a hobble to-day, thou shalt not suffer for it: I'll take no advantage of thee in misfortune; the forest is large enough both for thee and me to rove in: go thy ways up above, and enjoy thyself in these endless wilds; it is more than probable thou wilt never have another interview with man. So, fare thee well.' On saying this, I took up a large stick which

was lying there, held it for him to hook on, and then conveyed him to a high and stately mora. He ascended with wonderful rapidity, and in about a minute he was almost at the top of the tree. He now went off in a side direction, and caught hold of the branch of a neighboring tree; he then proceeded towards the heart of the forest; I stood looking on, lost in amazement at his singular mode of progress."

THE PANGOLIN, or *Short-tailed Manis*, is larger than the Phatagin, or long-tailed kind; his fore feet are covered with scales, but the Phatagin's feet and part of his fore legs have none, being only clothed with hair. They are both found in the East Indies and in Africa, where the negroes eat their flesh, considering it a delicate, wholesome food. The Pangolin has larger scales, thicker, more convex, and not so close as those of the Phatagin, which are armed with three sharp points; while the scales of the Pangolin are without points, and uniformly sharp. The Phatagin is hairy upon the belly; and the Pangolin has no hair on that part of his body, but between those scales which cover his back some thick and long hair issues like the bristles of a hog, which are not found on the back of the Phatagin. The Pangolin is from six to eight feet in length, including his tail; the tail is very near as long as the body, though it appears shorter when young; the scales are not then so large nor so thick, and of a pale color, which is deeper when the animal is adult; they acquire such a hardness, that they resist a musket ball. Like the ant-eaters, both these animals live chiefly upon ants; their body and their tail are also very long, and the claws of their feet very near of the same length and the same form, but equal in number. The Pangolin is also toothless, and has a long cylindrical tongue, which it uses in the same manner as that animal to procure the insects on which it subsists. When it approaches an ant-hill, it lies down near it, concealing, as much as possible, the place of its retreat, and stretching out its long tongue among the ants, keeping it for some time immovable. These little creatures, allured by its shining appearance, and the unctuous substance with which it is smeared, instantly gather upon it in great numbers; and when the Pangolin

supposes that it has a sufficiency, it quickly withdraws the tongue, and swallows them at once. This operation it repeats till it is satisfied, or till the ants, grown more cautious, will be no longer allured to their destruction.

THE ANT-EATER inhabits Guiana, Brazil, and Paraguay. As its name imports, it lives principally upon ants and termites,



The Great Ant-eater.

which it procures in precisely the same manner as was related of the manis. Its short legs and long claws would lead an observer to suppose that its pace

was slow and constrained. When chased, however, it runs off with a peculiar trot, and with such rapidity, that it keeps a horse to its speed to overtake it. Schomburgh relates that a tame ant-eater, in his possession, by no means restricted itself to ants, but devoured meat, when minced, with much avidity. The same naturalist also discovered a julus, or millipede, in the stomach of an ant-eater which he dissected. The ordinary length of this animal is about three feet seven inches, and its height is usually about three feet.

THE LITTLE ANT-EATER also inhabits Guiana and Brazil. The principal characteristics of this animal are the shortness of its muzzle, and the prehensile power of its tail, which it twists round the branches on which it principally resides. It often attacks the nests of wasps, pulling them to pieces with its claws, and devouring the grubs. The length of its body is ten inches.

THE ARMADILLO.—Under the general name of Armadillo we may reckon several species, which seem to us really distinct; in all of them the animal is protected by a crust resembling bone; it covers the head, the neck, the back, the flanks, the buttocks, and the tail to the very extremity. This crust is covered outwardly by a thin skin, sleek and transparent: the only parts that are not sheltered by this buckler, are the throat, the breast, and

the belly, which presents a white grainy skin, like that of a plucked fowl; and, in considering these parts with attention, you will perceive the appearance of scales which are of the same substance as the crust. This crust is, however, not of one piece, like that of the turtle; it consists of several parts, joined to each other by as many membranes, which put this armor in motion. The number of these natural bands does not depend on the age of the animal; for the young Armadillo and the adults have in the same species the same number. Father d'Abbeville has distinguished six species of the Armadillo, but the principal difference between them consists in the number of bands or divisions in the armor of the different species. The Six-banded Armadillo differs from its fellows in being also of a smaller size, not larger than that of a young pig, and in its tail being shorter.

The Armadilloes in general are innocent, harmless animals; if they can penetrate into gardens, they will eat melons, potatoes, pulse, and roots. Though used originally to the hot climates of America, they live in temperate regions. There was one domesticated in Languedoc, which was fed at home, and went everywhere without doing any damage or mischief; they walk quickly, but they can neither leap, run, nor climb up trees; so they cannot escape by flight: they have then no other resource but to hide themselves in their holes, or if they are at too great a distance from their subterraneous habitations, they contrive to dig one before they are overcome; for the mole is not more expert in digging the ground.

POUCHED QUADRUPEDS.

The most remarkable circumstance, with regard to the *Marsupial* or *Pouched Quadrupeds*, is the premature birth of their young, and the exceedingly unformed and imperfect state in which they are brought into the world. They are incapable of motion, and scarcely exhibit even the rudiments of limbs or other external organs. Their mouth is simply a round orifice, without distinction of parts; but by means of it, they attach themselves to the nipples of the mother, and there remain immovably fixed, deriving their nourishment from them, and gradually improving in shape

and increasing in size, until they are as completely formed as other animals are at the time of their birth. So small in proportion are the young when first born, that the kangaroo, which, when full grown, is as large as a sheep, and weighs one hundred and fifty pounds, is at its birth no more than an inch in length, and weighs only twenty-one grains.

Generally, the female is furnished with a duplicature of the skin of the abdomen, which forms a kind of bag, covering the nipples, in which it places its young, and preserves them during the period of helplessness. Frequently, indeed, even after they have acquired strength to leave this pouch, they retreat into it upon the approach of danger. Sometimes, in place of the pouch, there is simply a fold of the skin. The pouch is supported by means of two bones attached to those of the pelvis, from which proceed muscles that open or contract its mouth, like the opening of a purse. These bones are found also in the male, and in those species which have not the complete pouch; and are always an indication that the animal belongs to this order.

THE GREAT KANGAROO inhabits New Holland and Van Diemen's Land. Its length is about five feet without the tail, which measures about three feet. Its singular formation, pecu-



Great Kangaroo.

liarily adapted to the country, calls forth a corresponding degree of ingenuity on the part of the natives, who live much on its flesh. Its method of progression is by immense leaps from its long hind legs, assisted by its tail. The length of each leap is about fifteen feet. Of

course this swiftness would soon leave its pursuers behind, but the Australian is able to break one of its limbs or strike it insensible to the ground with his boomerang, the most wonderful weapon that uncivilized man ever produced. This extraordinary missile is a flat curved piece of wood, which the Australian natives can wield with wonderful skill, making it describe circles in the air,

or rush at an object, and then return to its owner's feet; or throw it at the ground and make it leap over a tree and strike an object at the other side. There are many species of kangaroo, the most extraordinary being the Tree Kangaroo, which can hop about on trees, and has curved claws on its fore paws, like those of the sloth, to enable it to hold on to the branches. All the kangaroos and the opossums are supplied by Nature with the pouch, in which to deposit their young, from which they are called "marsupiated" animals, from the Latin word marsupium, a purse or pouch.

The kangaroos make no use of their short fore legs except in grazing, when they rise upon them and their tail, bring their hind legs forward, and go nibbling upon all fours, pulling up occasionally some favorite plant with their fore paw, and sitting up bold and erect upon their hind houghs and tail, while they slowly bite and nibble it, shifting it from paw to paw, like a boy protracting his repast on a juicy apple. When chased, they hop upon their hind legs, bounding onwards at a most amazing rate, the tail wagging as they leap, and serving them for a balance. They will bound over gullies, and down declivities, the distance of thirty yards, and fly right over the tops of low brushwood; so that, in such places, dogs stand very little chance with them; but in a clear open country soon tire them out. The dogs seize them generally by the hip, and throw them over; then fasten upon their throats and finish them. But few dogs will attack a large kangaroo singly, some of the two hundred weight size often hopping off with three or four assailants hanging about them; and I was informed of one that actually carried a man to some distance. When a dog gets up close to a large kangaroo, it will often sit upon its tail and haunches, and fight the dog, turning adroitly round and round (so as always to face him), and pushing him off with the fore paws; or it will seize and hug him like a bear, ripping him up with the long sharp claw on its powerful hind leg. They are constantly indeed cutting, and often killing, dogs with this terrible weapon, which will tear out the bowels at a single kick; and a large kangaroo is, on this account, very dangerous even for a man

to approach, when set at bay. The hunters immediately hamstring them when thrown, to prevent injury to themselves or the dogs; while the black natives give them a heavy blow over the loins with their waddie, which has the effect to completely paralyze their hind legs, as all the large nerves supplying these parts pass out there.

THE OPOSSUM.—This animal inhabits North America, and is hunted with almost as much perseverance as the racoon, not, however, for the sake of its fur, but of its flesh. When it perceives the hunter, it lies still between the branches, but if disturbed from its hiding-place, it attempts to escape by dropping among the herbage and creeping silently away. Its food consists of insects, birds, eggs, etc., and it is very destructive among the hen-roosts. The Opossum uses its tail for climbing and swinging from branch to branch as the spider monkeys use theirs; but the Opossum uses its tail in a manner that the monkeys have never yet been observed to do, that is, making it a support for its young, who sit on its back and twist their tails round their mother's in order to prevent them from falling off.

Dr. Godwin thus describes its appearance and habits: "The general color of the opossum is a whitish gray. From the top of the head along the back and upper part of the sides, the gray is darkest, and this color is produced by the intermixture of coarse white hairs, upwards of three inches long, with a shorter, closer, and softer hair, which is white at base, and black for about half an inch at tip. The whole pelage (fur) is of a woolly softness and the long white hairs diverging considerably, allow the back parts to be seen, so as to give the general gray color already mentioned. On the face the wool is short, and of a smoky white color; that on the belly is of the same character, but is longer on the fore and hind legs; the color is nearly black from the body to the digits, which are naked beneath. The tail is thick and black, for upwards of three inches at base, and is covered by small hexagonal scales, having short rigid hairs interspersed throughout its length, which are but slightly perceptible at a little distance.

"The hunting of the opossum is a favorite sport with the

country people, who frequently go out with their dogs at night, after the autumnal frosts have begun, and the persimmon fruit is in its most delicious state. The opossum, as soon as he discovers the approach of his enemies, lies perfectly close to the branch, or places himself snugly in the angle where two limbs separate from each other. The dogs, however, soon announce the fact of his presence, by their baying, and the hunter, ascending the tree, discovers the branch upon which the animal is seated, and begins to shake it with great violence, to alarm, and cause him to relax his hold. This is soon effected, and the opossum, attempting to escape to another limb, is pursued immediately, and the shaking is renewed with greater violence, until at length the terrified quadruped allows himself to drop to the ground, where hunters, or dogs, are prepared to despatch him.

“Should the hunter, as frequently happens, be unaccompanied by dogs when the opossum falls to the ground, it does not immediately make its escape, but steals slowly and quietly to a little distance, and then gathering itself into as small a compass as possible, remains as still as if dead. Should there be any quantity of grass or underwood near the tree, this apparently simple artifice is frequently sufficient to secure the animal’s escape, as it is difficult by moonlight, or in the shadow of the tree, to distinguish it; and if the hunter has not carefully observed the spot where it fell, his labor is often in vain. This circumstance, however, is generally attended to, and the opossum derives but little benefit from his instinctive artifice.

“After remaining in this apparently lifeless condition for a considerable time, or so long as any noise indicative of danger can be heard, the opossum slowly unfolds himself, and creeping as closely as possible upon the ground, would fain sneak off unperceived. Upon a shout, or outcry, in any tone, from his persecutor, he immediately renews his death-like attitude and stillness. If then approached, moved, or handled, he is still seemingly dead, and might deceive any one not accustomed to his actions. This feigning is repeated as frequently as opportunity is allowed him of attempting to escape.”

THE ORNITHORHYNCHUS has not the pouch, like the opossum and kangaroo, but has the marsupial bones, and is therefore to be enumerated under this order. It is a most singular and anomalous animal, and approaches, in some particulars, to a resemblance to birds. When the creature was first discovered, it received the allusive name of *Ornithorhynchus Paradoxicus*; but it has since been denominated the *Platypus Anatinus*, or Duck-billed



Duck-billed Platypus.

Platypus. It has a depressed body, somewhat resembling that of an otter in miniature, which is covered with a soft fur, dark brown above, and of a ferruginous white beneath. The head is flattish,

and the snout so exactly resembles that of some broad-billed species of duck, that it might easily be mistaken for such. The tail is flat, furry, and of the same color as the body. The length of the whole animal, from the tip of the beak to that of the tail, is thirteen inches; of the beak an inch and a half. The legs are very short, and terminate in a broad web, which on the fore feet extends to a considerable distance beyond the claws; but on the hind feet reaches no further than the roots of the claws. On the upper part of the head, on each side, a little beyond the beak, are situated two oval white spots, in the lower part of each of which the eyes are embedded. From the general form of this animal, and particularly its bill and webbed feet, it may naturally be concluded that it resides in watery situations; that it has the habit of digging or burrowing in the banks of rivers or under ground; and that its food consists of aquatic plants and animals.

CHAPTER VI.

DIVISION I.—VERTEBRATES.

CLASS I.—MAMMALS.

ORDER III.—QUADRUPEDS.

SUB-ORDER.—HOOFED QUADRUPEDS.

THIS division of Quadrupeds comprises the *Ruminantia*, or cud-chewing, and the *Pachydermata*, or thick-skinned animals. The ruminating animals are the most distinctly marked among the Mammalia, having generally eight incisive teeth in the lower jaw; but, with the single exception of the camel, they have none in the upper—their place being occupied by a firm callous projection. The canine teeth are also usually wanting, and the grinders are always adapted for the mastication of vegetable food. In lieu of toes or nails, each of their feet is terminated by a double hoof, which has the appearance of a single hoof cut in two; and hence they are called cloven-footed. Examples of this order are found in the camel, lama, antelope, musk, deer, ox, sheep, and goat.

The most distinguished attribute of the ruminating animals, and that which gives to them their name, is the power of bringing their food up into their mouths, after it has been once swallowed, for the purpose of masticating it a second time. This power depends upon the structure of their stomachs, of which there are four. Of these the three first are so situated that the aliments may be made to enter either of them at pleasure, as the œsophagus terminates at a point where they all communicate together.

These animals usually feed upon grass and herbage; which substances, after being slightly chewed, are carried into the first stomach, called the *paunch*; there they undergo but little change, and are gradually transferred to the second stomach, a small globular cavity, called the *bonnet*, or *king's hood*, whose internal mem-

brane is arranged in cells of an appearance like those of honey-comb. Having received the food, this stomach divides it into little rolls or pellets, which are successively carried up into the mouth, where they undergo a thorough mastication, and are then again swallowed and deposited in the third stomach. This, called *manyplies*, *tripe*, or *feck*, is distinguished by the numerous longitudinal folds of its internal membrane. It effects some further change upon the alimentary mass. In the fourth stomach, however, into which it next passes, the principal work of digestion goes on. This answers to the single stomach of other animals; into it the gastric juice is poured, and here the function is finally completed. During the rumination, the animal remains in a state of repose, almost of sleep; and this operation continues until the whole of the food previously swallowed has been subjected to it.

The ruminating animals have been more valuable to man than any others. They are mild, docile, and easily domesticated. Their flesh furnishes us with a large proportion of our animal food; indeed, there are few other quadrupeds that man is in the habit of eating. Several of them, as the camel, the lama, ox, and reindeer, are used as beasts of draught and burden. They require, comparatively, little care, attention, or protection, and are generally contented with the cheapest and coarsest food. The milk, fat, hair, wool, skins, horns, and feet of one species or another, are made use of, for nourishment, for clothing, or for various manufactures.

The thick-skinned animals, or *Pachydermata*, embrace all those with hoofs which do not ruminate. They present a greater variety than the ruminating animals, and are called *Pachydermata*, because they are commonly covered with thick, tough skin. They usually have incisive teeth in both jaws, and frequently canine teeth, or tusks, of very great size. Included in this order are the elephant, the hippopotamus, the tapir, the hog, etc.

Under this order are included the Solipeda, or *single-hoofed* animals, in which the whole foot is enveloped in a single hoof. Of these, the most celebrated is the horse, one of the most beautiful and noble of quadrupeds. These animals are distinguished,

beside the formation of their hoofs, by the possession of six incisive teeth in each jaw; and, in the male, of two small canine teeth in the upper, and sometimes in the under jaw, which are wanting in the female. Between these and the double teeth, or grinders, there is a vacant space, just corresponding to the angle of the lips, where the bit of the bridle is placed, by which man is enabled to guide and restrain him. Beside the horse, which is the most valuable and highly prized of all the domestic animals, this family embraces the ass, the zebra, the dziggetai, a species between the horse and the ass in size, of a light bay color, inhabiting the central deserts of Asia, and the quagga, an inhabitant of Africa, resembling in shape the horse, but in stripes of dark and white colors, the zebra.

RUMINATING QUADRUPEDS.

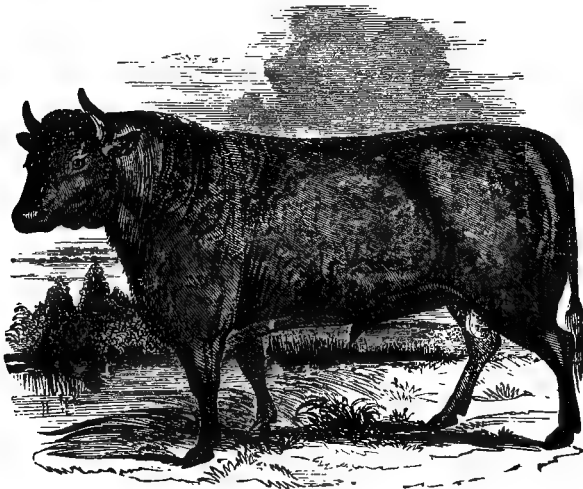
Bos, or *Ox*, of which the Bull is the male, is a genus of quadrupeds spread widely over the earth, scarcely any country being without its peculiar breed. The horns are concave and smooth, and the front teeth, only found in the lower jaw, are eight in number. The age of this animal is known by its teeth and horns. The first front teeth fall out when it is ten months old, and are replaced by others, which are larger and not so white: at sixteen months those on each side of the middle teeth drop out, and are replaced by others; and at three years old, all the incisive teeth are renewed: they are then all long, white, and even; and, in proportion as the animal advances in years, they decay, and become unequal



Wild Ox of Scotland.

and black. The horns fall off at three years, and these are replaced by other horns, which, like the second teeth, fall off no more; only those of the ox and the cow grow larger and longer than those of the bull; the growth of these second horns is not uniform. The first year, that is to say, the fourth year of the age of the ox,

two little pointed horns sprout, which are even, and terminate at the head by a kind of knob; the following year this knob grows from the head, pushed out by a cylinder of horn, which forms and terminates also by another knob, and so on; for as long as the animal lives, the horns grow: these knobs become annular knots, which are easily to be distinguished in the horns, and by which also the age may be easily known, by reckoning three years for the first knob next the point of the horn, and one year more for each of the intervals between the other knobs.

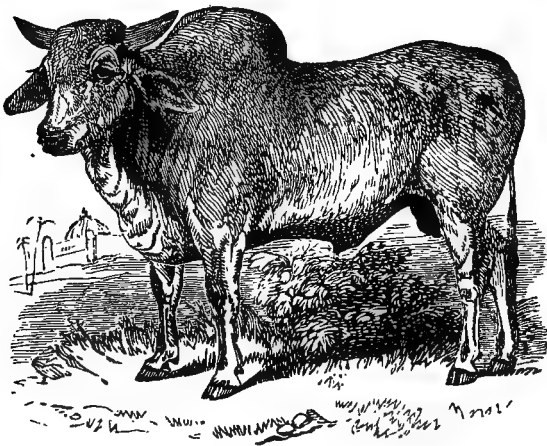


Bull.

The young ox is called a calf, and is quite as useful in its way as the full grown ox. The flesh is called veal, and by many preferred to the flesh of the ox or cow, which is called beef: jelly is made from its feet. The stomach is salted and dried, and is called rennet. Cheese is made by soaking a piece of rennet in water, and pouring it into a vessel of milk. The milk soon forms curd, which is placed in a press, and the watery substance, called whey, squeezed from it. The curd is colored and salted, and is then cheese.

When a number of cows are kept in the same yard, the oldest cow always takes precedence, and pushes the others with her horns if they interfere with her. She chooses her own rack, and if she sees another rack better furnished, she dispossesses the original proprietor, and with an air of ridiculous complacency appropriates it to herself. None of the junior cows attempt to leave the yard or enter it until she has preceded them, and so jealous is she of her authority, that if any enter before her she refuses to move until they have been turned out. She then looks round in a dignified manner, and marches in, followed by the rest of the troop.

THE ZEBU, or *Brahmin Bull*, is a native of India. It is a very conspicuous animal, on account of the hump on its shoul-



Zebu.

ders. There are different breeds of it, some larger than the American cattle, and some hardly larger than an ordinary hog. The Hindoo treats it with great reverence, and will not suffer it to be molested. It is in consequence so tame and familiar that it will often walk down the streets, examine the shops, and perhaps help itself to some sweetmeats; or it will lie down in the narrow street;

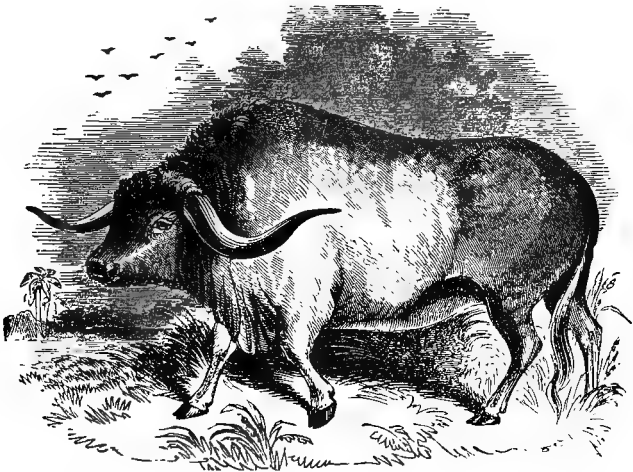
but no one must disturb it, they must either proceed by another road or wait until the sacred animal is pleased to rise. With singular inconsistency the Hindoo, although he honors the bull with such absurd reverence, yet has no pity on the ox. While the consecrated bull wanders with impunity through the streets, walks into shops (china shops or otherwise), and resents with a peevish push of its horns the slightest affront, the ox is fastened to the plough, urged on by the goad, and put to every kind of labor. The Zebu-cow, although not quite so well treated as the bull, yet enjoys more forbearance than the ox.

THE BUFFALO is by no means so beautiful a creature as the cow; his figure is more clumsy and awkward; his air is wilder; and he carries his head lower, and nearer the ground; his limbs are less fleshy, and his tail more naked of hair; his body is shorter and thicker than that of the cow kind; his legs are higher; his head smaller; his horns not so round, black, and compressed, with a bunch of curled hair hanging down between them; his skin is also harder and thicker, more black, and less furnished with hair; his flesh, which is hard and blackish, is not only disagreeable to the taste, but likewise to the smell. The milk of the female is by no means so good as that of the cow; it is, however, produced in great abundance. In the warm countries, almost all their cheese is made of the milk of the Buffalo; and they supply butter also in large quantities. The veal of the young Buffalo is not better eating than the beef of the old. The hide of this animal seems to be the most valuable thing he furnishes. The leather made of it is well known for its thickness, softness, and impenetrability. As these animals are, in general, larger and stronger than the cow, they are usefully employed in agriculture. They are used in drawing burdens, and sometimes in carrying them; being guided by a ring, which is thrust through their nose. Two buffaloes yoked in a wagon, are said to draw more than four strong horses: as their heads and necks are naturally bent downward, they are thus better fitted for the draught, and the whole weight of their bodies is applied to the carriage that is to be drawn forward.

Although these animals are chiefly found in Asia, yet they

are bred in several parts of Europe, where they make the food and the riches of the poor. The female produces but one at a time, in the same manner as the cow; but they are very different in the times of gestation; for the cow, as we know, goes but nine months; whereas the Buffalo continues pregnant for twelve. In general, they are inoffensive animals, if undisturbed; as, indeed, all those which feed upon grass are found to be; but when they are wounded, or when even but fired at, nothing then can stop their fury; they then turn up the ground with their fore feet, bellow much louder and more terribly than the bull, and make at the object of their resentment with ungovernable rage. It is happy, in such circumstances, if the person they pursue has a wall to escape over, or some such obstacle, otherwise they soon overtake, and instantly destroy him. It is remarkable, however, that although their horns are so very formidable, they in general make more use of their feet in combat, and rather tread their enemies to death than gore them.

THE CAPE BUFFALO is a native of Southern Africa. It is exceedingly ferocious and cunning, often lurking among the trees

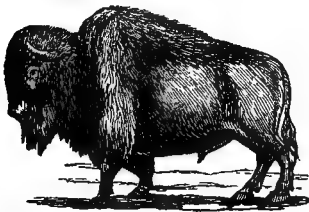


The Cape Buffalo.

until an unsuspecting traveller approaches, and then rushing on him and destroying him. The ferocious creature is not content with killing his victim, but stands over him mangling him with its horns, and stamping on him with its feet. Cumming shot several of these animals, and once or twice had narrow escapes from them, as they are difficult to kill. His description of their aspect is very good, and we cannot do better than give it in his own words.

“Their horns reminded me of the rugged trunk of an oak tree. Each horn was upwards of a foot in breadth at the base, and together they effectually protected the skull with a massive and impenetrable shield. The horns, descending and spreading out horizontally, completely overshadow the animal’s eyes, imparting to him a look the most ferocious and sinister that can be imagined.”

THE BISON is a variety of the ox tribe. It inhabits both parts of the American continent; and in North America immense herds are frequently seen. The fore parts of the body are very thick and strong; the hinder are comparatively slender; the body is covered in many parts with long shaggy hair; the horns are short, rounded, and pointing outwards; and on the shoulders is a high protuberance, which is the distinctive mark of the bison. This hunch is considered a great delicacy by the Indians.



The Bison.

These animals are so ferocious, that they cannot be safely pursued, except in forests, where

there are trees large enough to conceal the hunters: they are, therefore, generally taken in pitfalls covered with boughs of trees and grass, where they are easily overcome and slain. They commonly range in droves, feeding in the open prairies morning and evening; and reposing during the sultry part of the day on the shady banks of rivulets or streams of water. When only wounded by the hunter, the bison is a most dangerous antagonist, and rushes

on its enemy with the most determined ferocity. Richardson gives an instance of its fury when wounded.

“Mr. Finnan M'Donald, one of the Hudson's Bay Company's clerks, was descending the Saskatchewan in a boat, and one evening, having pitched his tent for the night, he went out in the dusk to look for game. It had become nearly dark, when he fired at a bison bull, which was galloping over a small eminence, and as he was hastening forward to see if his shot had taken effect, the wounded beast made a rush at him. He had the presence of mind to seize the animal by the long hair on its forehead as it struck him on the side with its horn, and being a remarkably tall and powerful man, a struggle ensued, which continued until his wrist was severely sprained, and his arm was rendered powerless; he then fell, and after receiving two or three blows became senseless. Shortly afterwards he was found by his companions lying bathed in blood, being gored in several places, and the bison was couched beside him, apparently waiting to renew the attack had he shown any signs of life.”

The strength and weight of the Bison is enormous, and as it is a fierce as well as a powerful animal, it may seem singular that it should be so easily killed. The explanation of this question will be found in the structure of the animal. It will be seen from the engraving that the Bison holds its head low, and cannot see much higher than the legs of a horse without exertion. In consequence, when enraged, it charges in a direct line, and thus the trained horses of the Indian hunters turn aside from its course, and contrive to place themselves close alongside the furious animal, sheering off with admirable dexterity as soon as the deadly arrow has sped from their masters' hands. Indeed, a well-trained horse will unhesitatingly dash in among a whole herd of bisons, threading its way among them unscathed.

The flesh of the Bison is tolerable eating, but the “hump” appears, from all accounts, to be unapproachable in delicacy. It is exceedingly tender, and possesses the property of not cloying even when eaten in excess. The fat also is said to be devoid of that

sickening richness which is usually met with in our domesticated animals.

THE YAK, of Tartary and Thibet, combines in itself many of the characteristics of different classes of animals. It has the general form of the ox; in some points of its configuration, in the character of its tail, in its gait, and by its swiftness, it resembles the horse; it has the fleece of the sheep, the sure-footedness and activity of the goat, and, lastly, the voice of the pig, or ather a deep grunt resembling that of the pig, whence, doubtless, its name of yak. The Yak supplies the place of all the above-mentioned animals in countries where hardly any other domestic animal is known; it is used under the saddle, employed to carry burdens, and to draw the plough and the cart, is valued as a source of milk, and also for its abundant fleece, out of which a serviceable and water-proof cloth is made.

THE MUSK OX is a native of North America, and is not very unlike the yak in appearance. It is covered with very long hair, which reaches almost to the ground. Its flesh is tolerably good when fat, but at other times it smells strongly of musk. The horns of this animal are united together at their base, forming a kind of shield or helmet covering the forehead. When the hunters wish to shoot the Musk Ox they conceal themselves, and fire without permitting the oxen



Musk Ox.

to see them. The poor animals seem to fancy that the report of the guns is thunder, and crowd together in a mass, so that they afford a good mark. If, however, they catch sight of one of their assailants, they instantly charge at him, and then are very dangerous enemies. Both this animal and the yak are small, scarcely equalling in size the small Highland cattle, but the thick hair which covers them makes them look larger than they really are.

THE GNU, or *Wildebeest*, inhabits Southern Africa. At first

sight it is difficult to say whether the horse, buffalo, or deer predominates in its form. It, however, belongs to neither of these animals, but is one of the bovine antelopes. The horns cover the top of the forehead, and then, sweeping downwards over the face, turn boldly upwards with a sharp curve. The neck is furnished with a mane like that of the horse, and the legs are formed like those of the stag. It is a very swift animal, and when provoked, very dangerous. When it attacks an opponent it drops on its knees, and then springs forward with such force that, unless he is extremely wary and active, he cannot avoid its shock. When first alarmed, its movements are very grotesque, and are thus described by Cumming: "When the hunter approaches the old bulls, they commence whisking their long white tails in a most eccentric manner; then springing suddenly into the air, they begin prancing and capering, and pursue each other in circles at their utmost speed. Suddenly, they all pull up together, to overhaul the intruder, when two of the bulls will often commence fighting in the most violent manner, dropping on their knees at every shock; then quickly wheeling about, they kick up their heels, whirl their tails with a fantastic flourish, and scour across the plain enveloped in a cloud of dust."

THE KUDU is a native of South Africa, living along the wooded borders of rivers. It is chiefly remarkable for its beautifully shaped horns, which are about four feet in length, and twisted into a large spiral of about two turns and a half. A bold ridge runs along the horns and follows their curvature. When hard pressed it always takes to the water, and endeavors to escape by its powers of swimming. Although a large animal, nearly four feet in height, it can leap with wonderful activity. The weight of the horns is very considerable, and partly to relieve itself of that weight, and partly to guard them from entanglement in the bushes among which it lives and on which it feeds, it carries its head backwards, so that the horns rest on its shoulders.

THE NYLGHAU, one of the largest and most magnificent of the antelopes, inhabits the forests of India. It is extremely vicious, and cannot be approached without danger. Its method

of attack is similar to that of the gnu, namely, dropping upon its knees and then springing violently forward. The tiger is its great enemy, and often destroys it in spite of its courage. During the day the Nylghau conceals itself in the forests, and at night leaves its coverts to feed, often doing no inconsiderable harm to adjacent cultivated lands.

The color of this creature is a slaty blue; it has, however, several white spots, and from its throat and shoulders hangs a dense bunch of hair. It is about the same size as the gnu, standing about four feet high at the shoulder.

THE HARNESSED ANTELOPE is common in Senegal. It resembles the gazelles, especially the nanguer, by the size and shape of its body, by the fineness of its legs, by the shape of its head and muzzle, by the eyes, by the ears, and length of its tail, and by the defect of a beard; but every gazelle, especially the nanguer, has the belly white, while the breast and belly of the Guib is of a deep brown. It also differs from the gazelles by the horns, which are smooth, and not marked with annular prominences. They are also a little compressed; and the Guib,



Harnessed Antelope.

in these particulars, is more like the goat than the gazelle; nevertheless, it is neither the one nor the other, but of a particular kind, which seems to be intermediate between the gazelle and the goat. It is also remarkable for white lists on a brown ground, which are disposed along the animal's body, as if it were covered with a harness. It feeds in company; and they are found in numerous herds in the plains of Podor.

THE ELAND is a large, heavy animal, which, when full grown, weighs from seven to nine hundred weight, and, contrary to the usual rule observed among antelopes, is commonly extremely fat. Its flesh is consequently more praised than that of any other wild animal of South Africa, and the large muscles of the thighs, in particular, are held in the highest estimation, when dried and

cured, under which form they are denominated thigh tongues. The character of this animal is very mild, and, as it were, predisposed to domestication; it is gregarious, and lives in large herds upon the open plains and low hills, the old males generally residing apart.

They are so gentle that a man on horseback may penetrate into the middle of the herd without alarming them, and pick out the fattest and best conditioned; and, as the old bulls are commonly chosen, on account of their greater size and weight, it not unfrequently happens that the herd is left altogether without a male.

THE ORYX, also a South African animal, is well known among hunters as the only antelope that revenges itself on the lion. When it sees the lion in the act of springing on it, it lowers its head, receiving the lion on the points of its sharp horns. It invariably perishes by the shock, but the lion also perishes with it. Their skeletons have more than once been seen lying together bleached on the plain. The description given of this animal by Cumming is highly graphic. "The oryx, or gemsbok, to which I was now about to direct my attention more particularly, is about the most beautiful and remarkable of all the antelope tribe. It is the animal which is supposed to have given rise to the fable of the unicorn, from its long straight horns, when seen in profile, so exactly covering one another as to give it the appearance of having but one. It possesses the erect mane, long sweeping black tail, and general appearance of the horse, with the head and hoofs of an antelope. It is robust in its form, squarely and compactly built, and very noble in its bearing. Its height is about that of an ass, and in color it slightly resembles that animal. The beautiful black bands which eccentrically adorn its head, giving it the appearance of wearing a stall collar, together with the manner in which the rump and thighs are painted, impart to it a character peculiar to itself. The adult male measures three feet ten inches in height at the shoulder."

THE SPRINGBOK is very fearful of man, and if it has to cross a path over which a man has passed before, it does not walk

over, but takes a tremendous leap, ten or twelve feet high, and about fifteen long, at the same time curving its back in a most extraordinary manner. It is from this habit of leaping that the Dutch Boers who inhabit the Cape have given it the name of Springbok.

Dr. Cumming thus describes a herd of these animals: "(On the 28th I had the satisfaction of beholding, for the first time, what I had often heard the Boers allude to, viz. a 'trek-bokken,' or grand migration of springboks. This was, I think, the most extraordinary and striking scene, as connected with beasts of the chase, that I have ever beheld. For about two hours before the day dawned I had been lying awake in my wagon, listening to the



Springbok

grunting of the bucks within two hundred yards of me, imagining that some large herd of springboks was feeding beside my camp; but on my rising when it was clear, and looking about me, I beheld the ground to the northward of my camp actually covered with a dense living mass of springboks, marching slowly and steadily along, extending from an opening in a long range of hills on the west, through which they continued pouring, like the flood of some great river, to a ridge about

a mile to the north-east, over which they disappeared. The breadth of the ground they covered might have been somewhere about half a mile. I stood upon the fore-chest of my wagon for nearly two hours, lost in wonder at the novel and wonderful scene which was passing before me, and had some difficulty in convincing myself that it was reality which I beheld, and not the wild and exaggerated picture of a hunter's dream. During this time their vast legions continued streaming through the neck in the hills in one unbroken compact phalanx.

"Vast and surprising as was the herd of springboks which I had that morning witnessed, it was infinitely surpassed by what I beheld on the march from my vley to old Sweir's camp; for on

our clearing the low range of hills through which the springboks had been pouring, I beheld the boundless plains, and even the hill sides which stretched away on every side of me, thickly covered, not with herds, but with one vast herd of springboks; as far as the eye could strain, the landscape was alive with them, until they softened down into a dim red mass of living creatures."

THE GAZELLES are hunted not only with dogs, assisted by the falcon, but also, in some countries, with the ounce. This fine animal, tamed for the purpose, generally goes with the hunter; and when the prey is near, they unchain it, and show it the Gazelles. It immediately exerts all its arts and fierceness in the pursuit, not, as might be supposed, by running after them, but by



Gazelle.

turning and winding about with the utmost cunning till it is near its prey, when it bounds all at once upon the Gazelle, strangles it instantaneously, and sucks its blood. If it misses its aim, which often happens, it rests in the place, nor attempts to pursue them any further; perhaps from the instinct that, as they can run much swifter, and a longer time, the chase would be useless. The master then draws near the ounce, coaxing it, and flinging it some

pieces of flesh, until he is near enough to chain and bring it back to its former station.

In some places they take the wild Gazelles by the means of a tame one, to the horns of which they fasten a snare made of cord. When a herd of Gazelles is found, the tame one is sent among the rest; it no sooner approaches than the males of the wild herd advance to oppose him, and, in butting with their horns, are entangled in the noose. In this struggle, they both commonly fall to the ground, when the hunter coming up kills the one, and disengages the other.

THE CHAMOIS is about the size of a common goat, to which it bears a very considerable resemblance. It differs from the goat



Chamois.

in the following respects: its under jaw is less prominent; its limbs are thicker; the horns are more slender and upright; and the beard is wanting. A singular circumstance is this—at the base of each horn behind there is an orifice, or opening, the reason or object of which it is difficult to ascertain. Some think it is to assist its breathing; but as there is no communication at all be-

twixt this opening and its lungs, it has been suggested to be more likely for the purpose of rendering its hearing more acute. The horns of the female are smaller than those of the male, and less bent at the tip. The face is whitish yellow, with two stripes of black on each side. The eyes are round and sparkling. During summer the hair which covers the body is close and short, like that of the stag; during winter it is thicker and longer than that of the goat. The color of the hair alters according to the seasons; in spring it is of a cinereous grey, in summer of a rufous brown, in autumn of a fawn color mixed with black, and in winter of a blackish brown.

The chamois species are very particular in the choice of food. They feed on the best herbage, and select the most delicate part of the plants, flowers, and tender buds. They have a particular fondness for the most aromatic mountain herbs, especially the *carlini* and *genipi*. In winter they yield to the hard law of necessity; they scrape away the snow to get at the reindeer-moss, and browse on the saplings of pine and fir. When they feed on succulent herbage they drink very little, and they ruminate during the intervals of feeding.

These animals are of a gentle disposition; they are vigilant and gregarious; they occupy the crags of mountains in flocks varying in number from four to a hundred; they live from twenty to thirty years; they prefer the morning and evening for their times of pasture, when the herbs are rendered more refreshing by the dewdrops which rest upon them. It is truly remarkable with what ease, and even seeming indifference, they run along the rocks, leaping from one to another, so as to defy the pursuit of dogs. And those precipices, which to other quadrupeds appear inaccessible, they will climb and descend with as much ease and comfort, as if they were bounding in their flight over a level plain. They can throw themselves down thirty feet of a rock, and alight on some small projecting fragment, just large enough to support their feet. Their limbs are peculiarly made for this arduous exercise, and their hind legs are so formed as to break the fall in alighting.

THE IBEX is found in several parts of Europe and Asia, as in the Alps, the Pyrenees, Carpathian Mountains, Mount Taurus,

and the tracts beyond the Lena. The male resembles the common goat in outward form; the eyes are large, round, and fiery; the horns, when of a full size, are large and heavy; the beard is long and dusky; the body is short, thick, and strong, and covered with a long, but not pendant coat; the legs are slender, and the hoofs are terminated by a *salient* border, that is, a border which fits for



Ibex.

leaping; the female is one-third less than the male, her color less tawny, and her horns much smaller. The Ibex will leap a rock fifteen feet high at three successive leaps, with an airy lightness almost resembling flying; when pursued he traverses the glaciers with amazing rapidity. This species is found in small flocks of from twelve to fifteen, which, during the winter, reside in elevated woods: in fair summer weather, they quit the woody regions in the daytime, and feed in their progress towards the highest summits, and then gradually descend at the approach of night. The usual season for hunting them is in the month of August and September, but it is a description of sport attended with great danger.

THE GOAT is a quadruped of the gregarious, or flock kind, resembling the sheep in size; its horns hollow, rather erect, and bending a little backward. It is covered with hair, pale and dun in its color, which in Eastern countries is spun into cloth. It was of cloth of this kind the ancient coverings of the tabernacle were made. Goats are noted for their long beard, which gives them an appearance exceedingly venerable. They feed on an immense variety of herbs; even poisonous herbs, which are destructive to others, are wholesome to them. Their milk is considered healthy and medicinal.

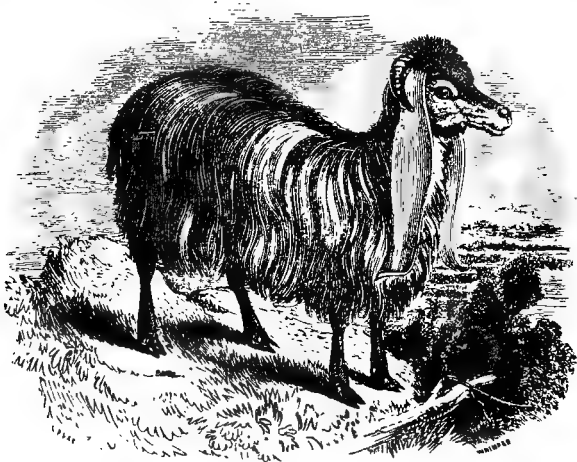


Common Goat.

They can run on sides of rocks, and with the greatest ease can leap from one rock to another. They feed on the tops of hills and among rugged rocks, in preference to valleys and plains of the richest luxuriance. They find sufficient nourishment in heathy, barren, and uncultivated ground, and carefully avoid moist places, marshy meadows, and rich pastures.

Goats go five months with young, and bring forth at the beginning of the sixth month; they suckle the young ones for about a month or five weeks; so that it may be reckoned about six-and-twenty weeks from the time of their coupling till the time that the young kid begins to eat. The goat generally produces one kid, sometimes two, very rarely three, and never more than four; and she brings forth young, from a year or eighteen months, to seven years. The knobs in the horns, and their teeth, ascertain their age. The number of teeth is not always the same in female goats; but they have usually fewer than the male goat, which has also the hair rougher, and the beard and the horns longer. These animals, like oxen and sheep, have four stomachs, and chew the cud. This species is more diffused than the sheep; and goats, like ours, are found in several parts of the world. only in Guinea and other warm countries they are smaller, but in Mus-

covy and other cold climates they are larger. The goats of Angora and of Syria have ears hanging down, but are of the same species

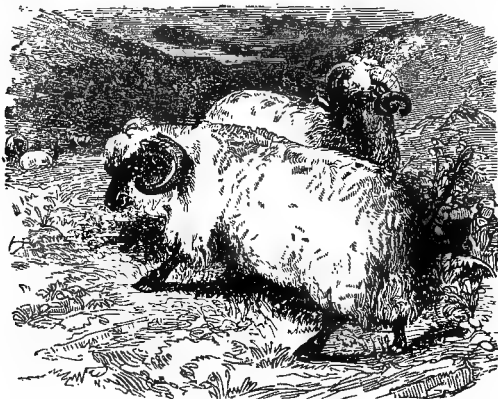


Syrian Goat.

with ours; they mix and produce together, even in our climate; the males have horns almost as long as the common goat, but the circumference and directions are very different; they are extended horizontally on each side of the head, and form spirals, somewhat like a worm. The horns of the female are short, and first turn round backward, then bend down, and turn round before, so much, that they end near the eyes; and in some their circumference and direction vary.

SHEEP. — There are many kinds of Sheep, among which the common sheep, the long-tailed sheep, and the Wallachian sheep are the most conspicuous. Next to the cow, the sheep is our most useful animal. England produces better wool than any country, for although the wool of the Spanish sheep is finer than ours, it is much less in quantity. The Merino, as this sheep is called, is annually conducted from one part of the country to another, and back again. The distance traversed is upwards of four hundred miles, and the time necessary to complete the journey

about six or seven weeks. The proprietors of the flocks think that these periodical journeys improve the wool; but it is in all probability a mistaken notion, as the stationary flocks of Leon and Es-



Common Sheep.

tramadura produce quite as fine a fleece. Of course such a body of sheep—nearly six millions—do great damage to the lands over which they pass, and many fall victims to fatigue or are destroyed by wolves.

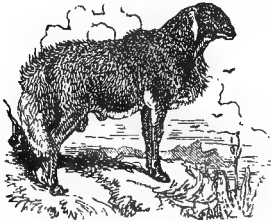
The Long-tailed Sheep inhabits Syria and Egypt. Its tail is so large and so loaded with fat, that to prevent it from being injured by dragging on the ground, a board is fastened to the under side of it, and wheels are often attached to the board. The peculiar fat of the tail is considered a great delicacy, and is so soft as to be frequently used as butter. The weight of a large tail is about seventy pounds.

The Wallachian or Cretan sheep is found in Crete, Wallachia, Hungary, and Western Asia. Its horns are exceedingly large, and twisted in a manner resembling the horns of the Kudu. It is very strong, and extremely vicious and unruly. In this and several other sheep the



Wallachian Sheep.

fleece is composed of wool and hair mixed. The hair of the Wal-lachian sheep is long and silky like that of a spaniel, and of great length, falling almost to the ground.



Tartar Sheep.

The Tartar Sheep, found in Tartary and Thibet, is a very prolific animal, the female bringing forth from three to five young at a birth. It is valuable for its flesh, which is excellent, and of a delicate flavor, but its wool is of little value.

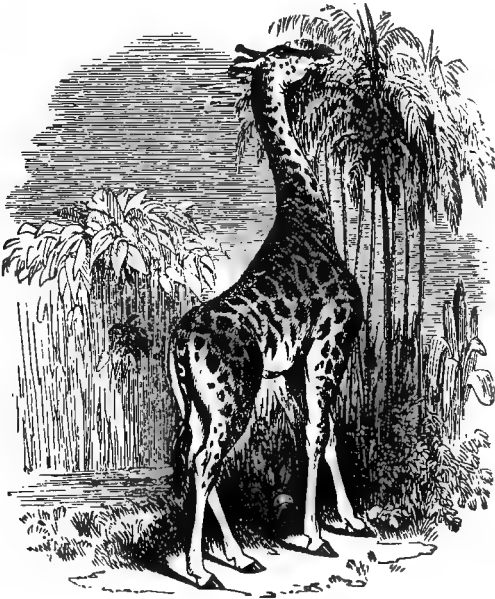
The sheep is indeed absolutely without resource and without defence.

The Wether Sheep are still more timorous than Ewes; it is through fear that they gather so often in troops; the smallest noise, to which they are unaccustomed, is sufficient to make them fly, and get close together. This fear is attended with the greatest stupidity; for they know not how to fly the danger, nor do they even seem to feel the inconvenience of their situation; they continue wherever they are, either in rain or snow; and to oblige them to change their situation, they must have a chief, who is intrusted to walk first, and whom they will follow step by step. This chief will remain with the rest of the flock, without motion, in the same place, if he be not driven from it by the shepherd, or the dog which guards them.

THE GIRAFFE is one of the tallest, most beautiful, and most harmless animals in nature. The enormous disproportion of its legs (the fore legs being as long again as the hinder ones) is a great obstacle to the use of its strength; its motion is waddling and stiff; it can neither fly from its enemies in its free state, nor serve its master in a domestic one. The species is not very numerous, and has always been confined to the deserts of Ethiopia, and some other provinces of Africa and India.

An African traveller thus describes this animal: "The Giraffe chews the cud, as all horned animals with cloven feet do. Like them, too, it crops the grass; though seldom, because pasture is scarce in the country which it inhabits. Its ordinary food is

the leaf of a sort of mimosa, called by the natives *kaneap*, and by the planters *kamel doorn*. The tree being peculiar to the canton, and growing only there, this may be the reason why it takes up its abode in it, and why it is not seen in those regions of the south



The Giraffe.

of Africa where the tree does not grow. This, however, is but a vague conjecture, and which the reports of the ancients seem to contradict.

“Its head is unquestionably the most beautiful part of its body. Its mouth is small; its eyes large and animated. Between the eyes, and above the nose, it has a very distinct and prominent tubercle. This is not a fleshy excrescence, but an enlargement of the bony part, the same as the two little bosses, or protuberances, with which its occiput is armed, and which rise as large as a hen’s egg, one on each side of the mane, at its commencement. Its

tongue is rough, and terminates in a point. Each jaw has six grinders on each side, but the lower jaw only has eight cutting teeth in front, while the upper jaw has none.

“The hoof is cloven, has no heel, and much resembles that of the ox. It may be observed, however, at the first sight, that the hoof of the fore foot is larger than that of the hind foot. The leg is very slender; but the knee is swelled like that of the stumbling horse, because the animal kneels down to sleep. It has also a large callosity in the middle of the sternum, owing to its usually reposing on it.

“If I had never killed a Giraffe, I should have thought, with many other naturalists, that its hind legs were much shorter than the fore ones. This is a mistake: they bear the same proportion to each other, as is usual in quadrupeds. I say the same proportion as is usual, because, in this respect, there are variations, even in animals of the same species. Every one knows, for instance, that mares are lower before than stallions. What deceives us in the Giraffe, and occasions this apparent difference between the legs, is the height of the withers, which may exceed that of the crupper from sixteen to twenty inches, according to the age of the animal; and which, when it is seen at a distance in motion, gives the appearance of much greater length to the fore legs.

“If the Giraffe stand still, and you view it in the front, the effect is very different. As the fore part of its body is much larger than the hind part, it completely conceals the latter; so that the animal resembles the standing trunk of a deep tree.

“Its gait, when it walks, is neither awkward nor unpleasing; but it is ridiculous enough, when it trots; for you would then take it for a limping beast, seeing its head, perched at the extremity of a long neck which never bends, swaying backwards and forwards, the neck and head playing in one piece between the shoulders as on an axis. However, as the length of the neck exceeds that of the legs at least four inches, it is evident that the length of the head, too, taken into the account, it can feed without difficulty, and of course is not obliged either to kneel down or to straddle with his feet, as some authors have asserted.

“Its mode of defence, like that of the horse and other solidungulous animals, consists in kicking with the heels. But its hind parts are so light, and its jerks so rapid, that the eye cannot follow them. They are even sufficient to defend it against the lion, though they are unable to protect it from the impetuous attack of the tiger.”

CAMEL.—The name, *camel*, with little variation, is the same almost in all languages. According to Linnæus, it is a distinct *genus* of animals. It has no horns; in the lower jaw it has six cutting teeth, but none in the upper; the upper lip is divided like that of the hare; its hoofs are small, the bottom of the foot tough and pliant, by which, above all other animals, it is fitted to be serviceable to man in crossing sandy, hot, and extensive deserts. The



The Camel.

neck and legs of camels are long and slender: when they lift up their heads they are high, and their appearance imposing and noble. Their ears are short, and their tail about a foot long. Their bodies are covered with a fine fur, which falls from them in the spring; this is considered valuable, and therefore gathered up with great care. The Turks eat the flesh of the young, and the Arabs hold their milk in great estimation. Unlike other animals, the interior

of the Camel is furnished with an additional bag, formed as a reservoir to contain a far larger quantity of water than is necessary for immediate use. On this account, he can continue a much longer time without drinking than any other quadruped, and is thus prepared and fitted for being useful to man as a beast of burden, in passing over extensive deserts, where a supply of water is rarely to be found. It seems also that the Camel has the power of closing its nostrils, so that the smallest particle of sand is excluded. This faculty renders it more suited to the life to which it is destined, in carrying merchandise over extensive sandy regions. The Camel, though naturally gentle and docile, is proverbially revengeful. No irrational animal remembers an injury longer, or resents it with greater severity. Hence, among the Arabs, "a camel's anger" is a proverb employed to denote determined and deep-rooted enmity.

The Arabs regard the Camel as a present from heaven, a sacred animal, without whose aid they could neither subsist, trade, nor travel. It has been emphatically called the ship of the desert. Its milk is their common nourishment; they likewise eat its flesh, especially that of the young ones, which they reckon very good. The hair of these animals, which is fine and soft, is renewed every year, and serves them to make stuffs for their clothing and their furniture. Blessed with their camels, they not only want for nothing, but they even fear nothing.

Large and strong camels generally carry a thousand, and even twelve hundred weight; the smaller only six or seven hundred. In these commercial journeys, they do not travel quick; and, as the route is often seven or eight hundred miles, they regulate their stages; they only walk, and go every day ten or twelve miles; they are disburthened every evening, and are suffered to feed at liberty. If they are in a part of the country where there is pasture, they eat enough in one hour to serve them twenty-four, and to ruminate on during the whole night; but they seldom meet with pastures, and this delicate food is not necessary for them: they even seem to prefer wormwood, thistles, nettles, furze, and other thorny vegetables, to the milder herbs; and so long as they

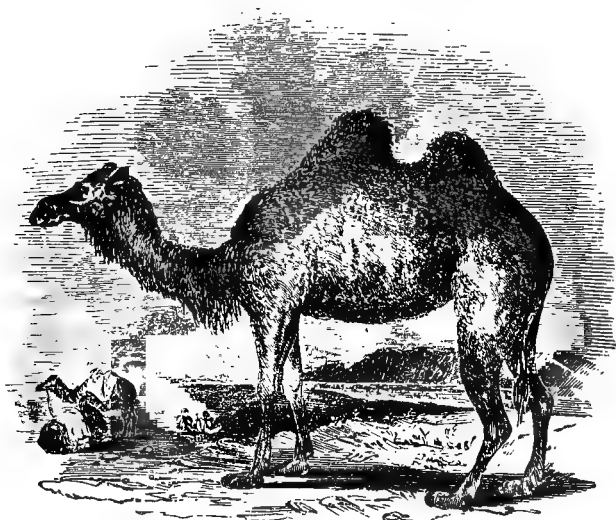
can find plants to browse on, they very easily live without any drink.

The facility with which they abstain so long from drinking, is not pure habit, but rather an effect of their formation. Independent of the four stomachs which are commonly found in ruminating animals, the Camel is possessed of a fifth bag, which serves him as a reservoir to retain the water. This fifth stomach is peculiar to the Camel. It is of so vast a capacity as to contain a great quantity of liquor, where it remains without corruption, or without the other aliments being able to mix with it. When the animal is pressed with thirst, or has occasion to dilute the dry food, and to macerate it for rumination, he causes a part of this water to reascend into the stomach, and even to the throat, by a simple contraction of the muscles.

This animal bears about him all the marks of slavery and pain; below the breast, upon the sternum, is a thick and large callosity, as tough as horn; the like substance appears upon the joints of the legs; and although these callosities are to be met with in every animal, yet they plainly prove that they are not natural, but produced by an excessive constraint, and pain, as appears from their being often found filled with pus. It is therefore evident, that this deformity proceeds from the custom to which these animals are constrained, of forcing them, when quite young, to lie upon their stomach with their legs bent under them, and in that cramped posture to bear not only the weight of their body, but also the burdens with which they are laden. These poor animals must suffer a great deal, as they make lamentable cries, especially when they are overloaded; and, notwithstanding they are continually abused, they have as much spirit as docility. At the first sign they bend their legs under their bodies, and kneeling upon the ground, they are unloaded, without the trouble of lifting up the load to a great height, which must happen, were they to stand upright. As soon as they are loaded, they raise themselves up again without any assistance or support; and the conductor, mounted on one of them, precedes the whole troop, who follow him in the same pace as he leads. They have need of neither

whip nor spur to excite them : but, when they begin to be fatigued, their conductors support their spirits, or rather charm their weariness, by a song, or the sound of some instrument. When they want to prolong the route, or double the day's journey, they give them an hour's rest ; after which, renewing their song, they again proceed on their way for many hours more ; and the singing continues until the time they stop. Then the camels again kneel down on the earth, to be relieved from the burden, by the cords being untied, and the bales rolled down on each side. They remain in this cramped posture, with their belly couched upon the earth, and sleep in the midst of their baggage, which is tied on again the next morning with as much readiness and facility as it was untied before they went to rest.

THE DROMEDARY is the Arabian camel. It is found in the warmer parts of Asia, and in the upper regions of Africa. In

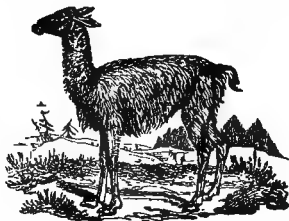


The Dromedary.

Asia it is not found further than Persia ; and in Africa, not further than Ethiopia. It is common in most parts of India.

The general height of the Dromedary from the ground to the top of the bunch upon its back is about six feet and a half. Its height from the ground to the top of its head, when it elevates it, is nearly nine feet. The head and neck are seldom elevated, but chiefly stretched out in a line with the bunch on its back. The head is small, the neck much elongated, the body of a long and meagre shape, the legs rather slender, and the tail, which is slightly tufted at the end, reaches to the joints of the hind legs. The feet are large. They are peculiarly hoofed, being divided above into two lobes, not reaching through the whole length of the foot. The extremity of the foot is defended by a small hoof. The under part of the hoof is covered with an extremely tough and flexible skin, which enables the animal to travel with peculiar ease and security over dry, stony, and sandy regions. The general color is an uniform dusky brown, more or less tinged with the ferruginous, or *irony*. Its hair is fine and soft, and serves for the manufacture of several kinds of stuffs.

THE LLAMA is about four feet high; its body, comprehending the neck and head, is five or six feet long; its neck alone is near three feet. The head is small and well proportioned, the eyes large, the nose somewhat long, the lips thick, the upper divided, and the lower a little depending: it wants the incisive and canine teeth in the upper jaw. The ears are four inches long, and move with great agility. The tail is seldom above eight inches long, small, straight, and a little turned up at the end. It is cloven-footed, like the ox; but the hoof has a kind of spear-like appendage behind, which assists the animal to move and support itself over precipices and rugged ways. The back is clothed with a short wool, as is the crupper and tail; but it is very long on the belly and sides. These animals differ in color; some are white, others black, but most of them brown.



The Llama.

These useful, and even necessary animals, are attended with no expense to their masters; for, as they are cloven-footed, they do not require to be shod, nor do they require to be housed, as their wool supplies them with a warm covering. Satisfied with a small portion of vegetables and grass, they want neither corn nor hay to subsist them; they are still more moderate in what they drink, as their mouths are continually moistened with saliva, which they have in a greater quantity than any other animal. The natives hunt the *Guanacos*, or Wild Llama, for the sake of its fleece. The dogs have much trouble to follow them.

The growth of the Llama is very quick; and its life is but of short duration. This animal couples at three years of age, and remains strong and vigorous till twelve; after which it begins to decline, and becomes entirely useless at fifteen. Their nature appears modelled on that of the Peruvians. They are gentle and phlegmatic, and do everything with the greatest leisure and caution. When they stop on their journeys, they bend their knees very cautiously, in order to lower their bodies without disordering their load. As soon as they hear their driver whistle, they rise up again with the same precaution, and proceed on their journey; they feed as they go along, on the grass they meet with in their way, but never eat in the night, making use of that time to ruminate. The Llama sleeps, like the camel, with its feet folded under its belly, and ruminates in that posture. When overloaded or fatigued, it falls on its belly, and will not rise, though its driver strike it with his utmost force.

The Llama is in general a timid and docile animal. If teased or ill-treated, however, they become spiteful. Their mode of manifesting their anger is singular; it consists in darting their saliva in considerable quantity upon the person who offends them. They will cover with it a surface of three or four yards in extent.

THE MUSK DEER, a native of the East Indies, is three feet six inches in length, from the head to the tail; and the head is above half a foot long. The fore part of the head is like that of a greyhound; and the ears are three inches long, and erect, like those of a rabbit; but the tail is not above two inches. It is cloven-

footed, like beasts of the goat kind; the hair on the head and legs is half an inch long, on the belly an inch and a half, and on the back and buttocks three inches, and proportionably thicker than in any other animal. It is brown and white alternately, from the root to the point; on the head and thighs it is brown, but under the belly and tail white, and a little curled, especially on the back and belly. On each



Musk Deer.

side of the lower jaw, under the corners of the mouth, there is a tuft of thick hair, which is short and hard, and about three-quarters of an inch long. The hair, in general, of this animal, is remarkable for its softness and fine texture; but what distinguishes it particularly are the tusks, which are an inch and a half long, and turned back in the form of a hook; and more particularly the bag which contains the musk, which is three inches long, two broad, and stands out from the belly an inch and a half. It is a very fearful animal, and, therefore, it has long ears; and the sense of hearing is so quick, that it can discover an enemy at a great distance.

The musk is an article of commerce, and is sold in small bags, about the size of a pigeon's egg, which, when cut open, appear to contain a kind of dusky, reddish substance, like coagulated blood, and which, in large quantities, has a very strong smell; but, when mixed and diffused, becomes a very agreeable perfume. Indeed, no substance has a stronger or a more permanent smell. A grain of musk perfumes a whole room; and its odor continues for some days without diminution.

THE RED DEER, or *Stag*, common in Europe and America, is one of those mild, tranquil, innocent animals, which seem as if they were created solely to adorn and animate the solitude of the forests, and to occupy, remote from man, the peaceful retreats of Nature. His light and elegant form; his flexible yet nervous limbs; his head rather adorned, than armed, with a living substance, which, like the branch of a tree is every year renewed;

his size, his swiftness, his strength, sufficiently distinguish him from the rest of the inhabitants of the forest.

The old Stags shed their horns first, which happens about the end of February or the beginning of March. Stags in their seventh year do not undergo this change till the middle or the end of March, nor do those in their sixth year, till the month of

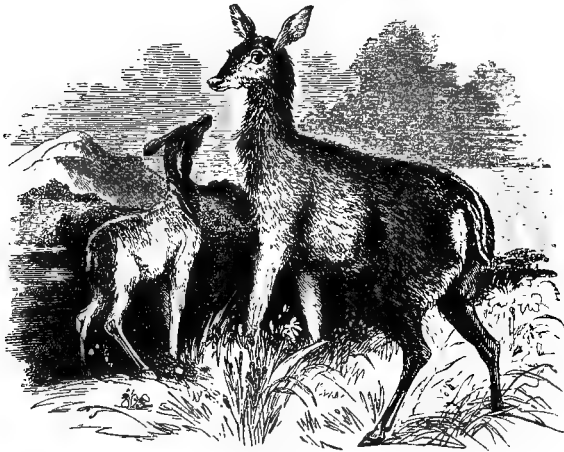


Stag.

April. After they have shed their horns, they separate from each other; the very young ones alone associating together. They remain no longer in covert; they seek the beautiful parts of the country, the groves, and the open coppices, where they remain all the summer, till they recover the antlers which were wont to adorn their brows; and, during this season, they carry their heads low, for fear of striking them against the branches; for they are exceedingly tender till they arrive at perfection. The horns of the oldest Stags are scarcely half repaired by the month of May; nor

to they attain their full length and hardness till about the end of July. The horns of the young Stag are very late shed, and very late recovered; but when these are completely lengthened, and have become quite hard, they rub them against the trees, in order to clear them from the scurf with which they are covered.

The Hinds, or females, carry their young eight months and a few days. They are not all prolific; and one sort there is in particular, which is always barren. The Fawn retains this appel-



Hind and Fawn

tation no longer than till it is six months old; then the knobs begin to appear, and it takes the name of a Knobber, which it bears till these knobs are lengthened to so many points, whence they are termed Prickets, or Brocketts. It does not quit its mother early, though it grows fast, but follows her all the summer. In winter, the Hinds, the Knobbers, the Pricketts, and the young Stags resort to the herd, forming troops, which are more numerous in proportion as the season is more severe. In spring they divide, the Hinds retiring to bring forth their young; and at this time

there are scarcely any but the Prickets and the young Stags which go together. In general, the Stags are inclined to remain with each other, and to roam abroad in companies; it is only from fear or necessity that they are ever found dispersed or separated.

THE ROEBUCK, though a much smaller animal than the stag, is, however, more graceful, vivacious, and courageous. It differs from the stag, not only in superior cunning, but also in its natural appetites, inclinations, and whole habits of living. Instead of herding together like the latter, the species of the former live in separate families: the sire, the dam, and the young ones, form of themselves a little community, nor do they ever admit a stranger into it. All other animals of the deer kind are inconstant in their affection. The Roebuck never forsakes its mate; and, as they have been generally bred up together, the male and female form for each other the strongest attachment.

The female of this species goes with young five months and a half, and brings forth about the end of April, or the beginning of May. The female separates herself from the male, when she is about to bring forth, retiring into the thickest part of the woods, in order to avoid the wolf, which is her most dangerous enemy. At the expiration of about ten or twelve days, the Fawns, of which there are generally two at a birth, attain strength enough to follow her. When they have attained the age of nine or ten months, she drives them off to do for themselves.

THE FALLOW DEER. — No two animals can be more nearly allied than the Stag and the Fallow Deer; and yet no two animals keep more distinct, or avoid each other with more fixed animosity. They are never seen to herd in the same place; it is even rare, unless they have been transported thither, to find Fallow Deer in a country where stags are numerous.

It frequently happens that a herd of Fallow Deer is seen to divide into parties, and to engage each other with great ardor. Each seems desirous of gaining some favorite spot of the park for pasture, and of driving the vanquished party into the coarser and more disagreeable parts. Each of these factions has its particular chief, namely, the oldest and the strongest of each herd. These

lead on to the engagement; and the rest follow under their direction. Their combats are singular enough, from the disposition and conduct by which their mutual efforts seem to be regulated. They attack with order, and support and assault with courage; they



Fallow Deer.

come to the assistance of each other; they retire, they rally, and never yield the victory upon a single defeat. The combat is renewed every day, till at length the most feeble side is obliged to give way, and is content to escape to the most disagreeable part of the park, where alone they can find safety and protection.

From the age of two years till that of fifteen or sixteen, the Fallow Deer is in a condition to produce; and, in fine, resembling the stag in all its natural habits, the greatest difference we find between these two animals, is in the duration of their lives.

THE WAPITI is one of the largest of the deer tribe, often

growing to the height of our largest oxen. It inhabits Canada and other parts of North America, and has been confounded with the Moose. Its horns are very large, measuring nearly six feet from tip to tip. It is very fierce, and boldly attacks an antagonist.

THE AXIS is of the small number of ruminating animals which wear horns, like the stag. It has the shape and swiftness of the fallow-deer; but what distinguishes it from the stag and fallow-deer is, that its body is marked with white spots, elegantly disposed, and separated one from another, and that it is a native of hot countries (Hindustan, and particularly Bengal); while the stag and deer have their coat of a uniform color, and are to be met with in greater numbers, in cold countries and temperate regions, than in hot climates.

THE REIN-DEER forms the sole riches of the Laplander,

and its care is almost his only occupation. According to the season, he migrates to the sea shore, the plains, or the mountains. The rich often possess 2000 head; and the poorer seldom less than 100. The adult male, in a wild state, is even larger than a stag; but the domesticated races



The Rein-Deer.

are somewhat smaller; the sight and scent of these creatures are astonishing, and guide them with wonderful precision through the most dangerous passes, and in the darkest stormy nights of an Arctic winter. To this sagacity the Laplander trusts his life with the greatest confidence; and accidents rarely happen: they draw his sledge with such amazing rapidity, that in twenty-four hours a pair of Rein-deer have been said to perform a journey of 100 miles. In a wild state they are gregarious; and, when domesticated, evince an excessive attachment to each other. During summer they are much tormented by a species of gad-fly; but the old account of the glutton falling upon them from a tree, and then

devouring them, is now considered fabulous. During life this useful animal supplies its master with labor and milk; and, when dead, every part becomes serviceable, the skin for clothing, and for boots; the horns to make utensils; the sinews for thread, and the flesh for food: the intestines are also used; and the tongue is a well-known article of commerce.

THE ELK of Europe is not the same with the Moose-deer of America: it is found in Europe between latitude 53° and 65° : in size it is higher than a horse; and, to support the enormous weight of its horns, sometimes nearly fifty pounds, its neck is short, thick, and very strong. Its movements are rather heavy: it does not gallop, but ambles along, the joints cracking so much at every step, that the sound is heard to some distance. During winter it chiefly resides in hilly woods; but in summer



The Elk.

it frequents swamps and the borders of lakes; often going deep into the water, to escape the stings of gnats, etc., and to feed without stooping. With its enormous horns it turns down branches of trees, to feed upon the bark, with great dexterity; and these are also used as shovels, to get at pasture when covered with snow.

THICK-SKINNED QUADRUPEDS.

THE HORSE.—The characters of the horse, or *equus caballus*, are, hoofs undivided, and mane and tail, with long, flowing hair. This noble animal has been so much and so long connected with man, that history does not mention a period when horses were untamed. Still, however, multitudes of them are found in a wild state in many parts of the earth. Large herds are occasionally seen in the southern parts of Siberia, in the great Mongolian deserts, and among the Kalkas, to the north-west of China. At the Cape of Good Hope there are numbers of unreclaimed horses

They are diminutive in their size, very vicious, and difficult to tame. They are found wild in several other parts of the African continent, but the wretched inhabitants are sunk in such ignorance



Wild Horse.

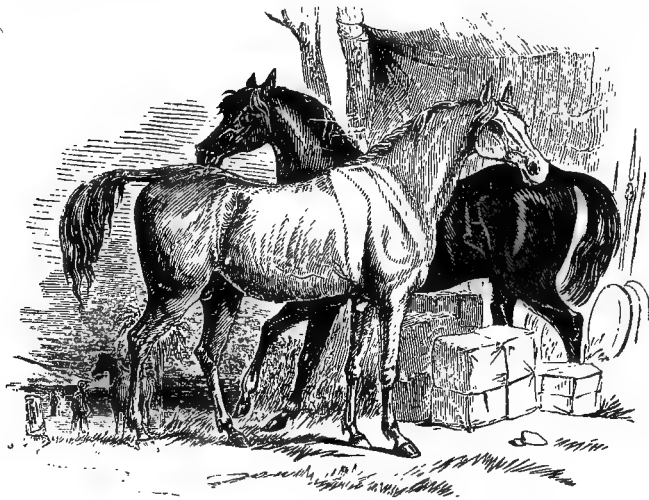
and indolence, so unacquainted with the services they are calculated to render to man, that they make no more attempt to tame them than to tame lions. In Spanish America there is an abundance of wild horses. There is little doubt that they are descended from the Andalusian breed, originally introduced from Spain by the first conquerors.

The Arabian horses are of a more slender make, less showy, but beautifully limbed, more hardy, and reckoned much fleet. Of all countries in which the horse runs wild, Arabia produces the most beautiful breed, and also the most generous, swift, and persevering. They are found in small numbers in the deserts of that country, and are so highly valued by the natives, that they employ every stratagem for obtaining them.

It is probable that Arabia was the original country of the horse, since there the utmost care is taken not to cross, but main-

tain the breed entire. The Arabian race of horses has been diffused in Barbary, Egypt, and Persia.

The Arabs keep their horses in the open air all the year round. Though exposed to the inclemency of the weather at all

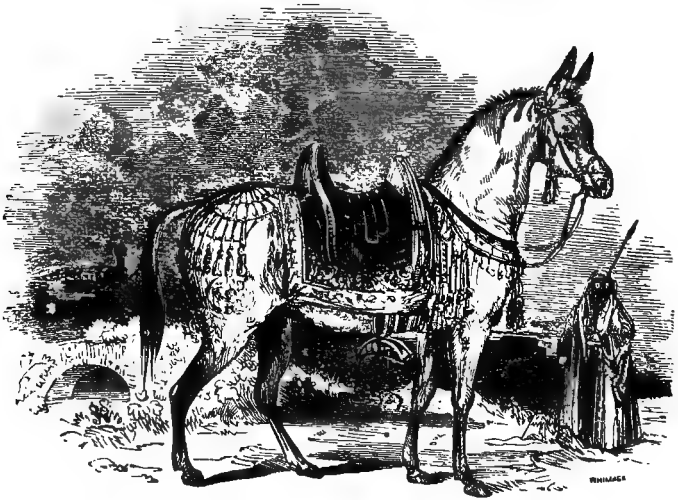


Arabian Horse.

seasons, and very little attention paid to its health, it is seldom ill. From the time a colt is first employed for the purpose of riding, the saddle is scarcely ever off its back. In winter a sackcloth is thrown over the saddle, but in summer the horse stands exposed to the mid day sun. Many of the Arabs use, instead of a saddle, a stuffed sheep-skin, and without stirrups. They ride without a bridle, and employ a halter instead. So attached is it to its master, and so great the kindness with which it is treated, that it feels itself rather the friend, than the slave of man.

THE MULE is a mongrel quadruped, showing a resemblance both to the horse and the ass. It is the offspring of a horse and she ass, or an ass and mare. By the immutable law of Nature, mules can have no descendants. Mules are of great antiquity, and were known in the days of David. In their disposition they are

rather vicious, intractable, and obstinate. They are remarkably hardy, sure-footed, and able to endure great fatigue. The finest mules are produced in Spain, and in some parts of the United



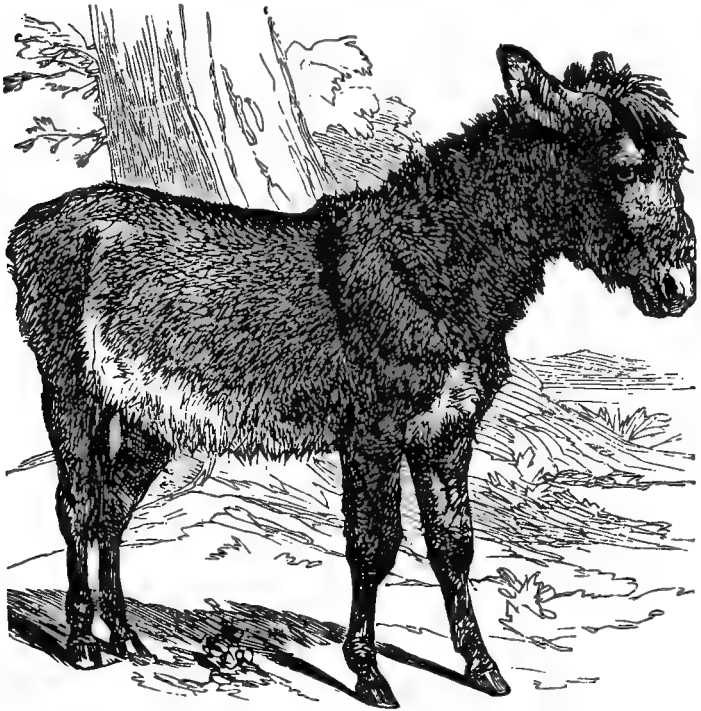
Mule.

States, and many of them are fifteen or sixteen hands high. It is surprising they are not more used in England, as they are much hardier than horses, and even surpass them in strength: they are less subject to disease, and will live and work to twice the age of a horse. They are particularly useful in mountainous countries, and in rocky, stony ways. Therefore they are much used in the Alps and Pyrenees. From the medals of Julia and Agrippina, it appears that the Roman ladies had chariots drawn by mules. David and his sons rode upon mules.

THE ASS.—The humble and hardy Ass is scarcely less serviceable to man than the more imposing horse. On the continent of Europe, where it meets with harsh treatment, is scantily fed, and only used for laborious tasks, it is dull and obstinate; but in the East, where it is employed by the rich nobles and is properly

treated, it is an elegant and spirited animal, with good action and smooth coat.

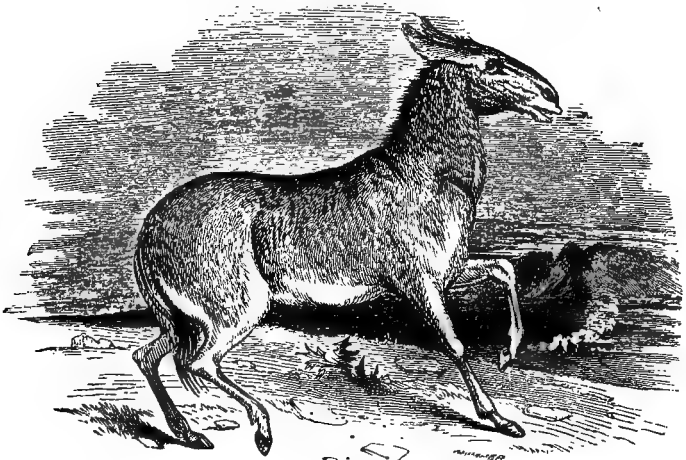
Neither asses nor horses were originally found in America,



Domestic Ass.

though the climate, and especially of that part called North America, is as good for them as any other: those which the Spaniards have transported from Europe, and which they have left in the West Indies and on the Continent, have greatly multiplied; and in some parts Wild Asses are found in troops, and are taken in snares like wild horses. The Wild Asses of America will not suffer a horse to live among them. Woe to the horse that chances

to stray into the pasture where they are feeding in bands. They fall upon him, and bite and kick him, till he ceases to exist.



Wild Ass.

The most beautiful specimen of asses is the ATUN, or *white ass*. Calmet says, that it is the immediate descendant of the *wild ass*, or *onager*, and is much valued by the great men of the East, and eagerly sought after for their own personal dignity and accommodation. Such is the price of these lovely and elegantly proportioned creatures, that common people are unable to procure them, and the possession of them is therefore restricted to the great and wealthy. Some writers have stated that the genuine race of white asses is peculiar to the vicinity of the river Euphrates. The white of this comely animal is of a silvery color contributing greatly to its noble appearance, and therefore suited to the imposing and graceful procession of ancient eastern princes.

THE DZIGGUETAI of the Tartars, has been but little known until recent years. It is a denizen of barren plains, where it gleans a sustenance from scattered patches of vegetation, passing with

great swiftness from one place to another in search of food and water. It is wary and timid, and its great fleetness, in which, according to the testimony of numerous travellers, it surpasses all other quadrupeds, secures it from beasts of prey, and enables it easily to outstrip the horses and dogs of the hunter.

The Tartars, who are fond of its flesh, sometimes kill it by ambush and stratagem, and sometimes secure it by surrounding it with a circle of hunters, after the Asiatic fashion. The form of the Dzigguetai is strikingly characteristic of an animal made for swift running, having the various points of figure which distinguish the racing or blooded horse, a figure which is produced in the horse by the efforts of art and by careful breeding, but which belongs to the Dzigguetai by nature.

THE ZEBRA, a native of Southern Africa, is, perhaps, the handsomest and most elegantly clothed of all quadrupeds. He has



The Zebra.

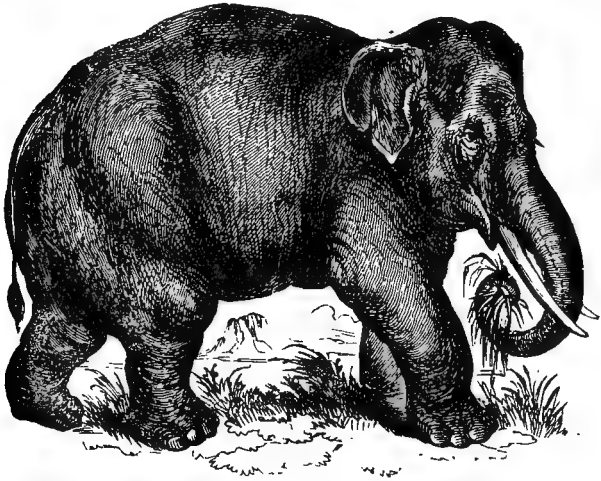
the shape and graces of the horse, the swiftness of the stag, and a striped robe of black and white alternately disposed with so

much regularity and symmetry, that it seems as if Nature had made use of the rule and compass to paint it. These alternate bands of black and white are so much the more singular, as they are straight, parallel, and very exactly divided, like a striped stuff; and as they, in other parts, extend themselves not only over the body, but over the head, the thighs, the legs, and even the ears and the tail; so that, at a distance, this animal appears as if he was surrounded with little fillets, which some person had disposed, in a regular manner, over every part of the body. In the females, these bands are alternately black and white; in the male, they are brown and yellow, but always of a lively and brilliant mixture, upon a short, fine, and thick hair; the lustre of which still more increases the beauty of the colors. The Zebra is, in general, less than the horse, and larger than the ass; and, although it has often been compared to those two animals, and called the *Wild Horse*, and the *Striped Ass*, it is a copy neither of the one nor the other, and might rather be called their model. It is very wild and suspicious, carefully placing sentinels to look out for danger. Notwithstanding these precautions, several zebras have been taken alive, and some, in spite of their vicious habits, have been trained to draw a carriage. In all probability it might be domesticated like the ass.

THE QUAGGA, also a native of South Africa, somewhat resembles the zebra, but is easily distinguished from that animal by the paucity and dullness of its stripes, which do not reach the hind quarters or legs. Over the haunches and shoulders these stripes form a kind of bifurcation, between the divisions of which there are a few transverse lines of the same color; but these suddenly and abruptly cease, and are not continued on the legs, which are perfectly white. Along the back there is a narrow longitudinal line, bordered on each side with white. The mane is throughout broadly and deeply tipped with black, and is marked by a continuation of the transverse bands of the neck. The lines of the face are narrow and beautifully regular; from the centre of the forehead they radiate downwards over the eyes; along the front of the muzzle they are longitudinal, the outer ones having a curve out-

wards; and on the sides they form broader transverse bands. It is very wild and vicious, but notwithstanding the natives sometimes tame it, and use it for purposes of draught.

THE ELEPHANT is a native of Asia and Africa, and not found, except by importation, in other continents. He prefers as his abode plains, forests, and gently rising hills, and is particularly fond of the shady banks of rivers. There he is often seen indulging himself, filling his trunk with water, which he disperses



Asiatic Elephant.

over his body that he may enjoy its cooling influence. He is very susceptible of both cold and heat, and therefore he is found at a suitable distance from the torrid and the frigid regions.

In seeing any animal for the first time, the size peculiarly attracts our attention. The Elephant is the largest animal that moves upon the face of the earth. When full grown, it is from seventeen to twenty feet in height. Its head is large, and somewhat resembling the shape of an egg. It has no fore teeth. From the upper jaw two tusks are projected, which are long, thick, and curved. The tusks form the ivory which is so generally known and

used throughout the whole civilized world. In each jaw it has four grinders of surprising size. Considering the magnitude of the animal, its eyes are small; its ears are large, hanging down upon the side of its head. As the mouth cannot reach the ground either for eating or drinking, Providence has furnished it with a most curious and useful member, called a proboscis. This is a cylindrical trunk, which is fleshy, movable in every direction, and which it can stretch out from one to five feet. By this it fetches food and water to its mouth, and is enabled to lift up from the ground the smallest object it can see. It is also employed as a means of defence, and also of severely punishing whatever it considers as an enemy. The female resembles the human species in this respect, it has two *mammæ* on its breast, by which it suckles its young. The skin of the Elephant is wrinkled, hairless, and of a mouse-like color. The tail is of a moderate length, the feet of course thick and strong, having each five hoofs. It is truly remarkable for its longevity, strength, sagacity, affection, fidelity, docility, and even modesty. It is considered as approaching nearest man, in apparent reason, prudence, skill, and forethought. It has been often educated for the most useful purposes, for carrying commodities with its trunk from one place to another, and even in lading and unlading ships. It is very gentle when treated with kindness, but when provoked it is most formidable: it tears with its teeth, tosses with its trunk; trees of considerable size it will overset, and push down houses and walls. With one blow of its trunk it can strike a horse dead. Anciently, elephants were used in war, and towers were fixed upon their backs, capable of containing thirty warriors. They are still used in eastern nations on occasions of state pomp and magnificence, gorgeously caparisoned, and having for their riders exalted and royal personages, arrayed in all the pride of Asiatic luxury.

The African Elephant is widely diffused through the vast forests, and is met with in herds of various numbers. The male is very much larger than the female; consequently, much more difficult to kill. He is provided with two enormous tusks. These are long, tapering, and beautifully arched: their length averages

from six to eight feet, and they weigh from sixty to a hundred pounds each.

The females, unlike Asiatic Elephants in this respect, are likewise provided with tusks. Old bull elephants are found singly or in pairs, or consorting together in small herds, varying from six to twenty individuals. The younger bulls remain for many years in the company of their mothers, and these are met together in large herds of from twenty to a hundred individuals. The food of the elephant consists of the branches, leaves, and roots of trees, and also of a variety of bulbs, of the situation of which he is advised by his exquisite sense of smell. To obtain these he turns up the ground with his tusks, and whole acres may be seen thus ploughed up.

The following account of elephant catching in Nepâl is by a medical gentleman residing at Segouly: — “The whole batch, tame and wild ones, then rushed into a deep river close by, where it was a splendid sight to see them swimming, fighting, diving, plunging, kicking, and bellowing in a most frantic manner; the mahouts (the riders on the tame ones) sticking to them like monkeys, and dexterously taking the opportunity of the confusion to secure the dreaded noose round their necks. One of the wild elephants in the struggle got half-drowned, and then entirely strangled; she just staggered to the shore, and then dropped dead without a struggle. It was really quite piteous to see her poor little young one, about ten days old; she kept walking round the body, pushing it, and trying to coax her dead mother to rise up; then uttering the most heart-rending cries, and lying down by her side as if it were to comfort her.

“When the contest was over, and the other elephants, tame ones, were brought up near the corpse, the poor little thing, with the most indignant, though, of course, unavailing valor, charged on all sides at any elephant who came near, determined evidently to defend its mother, even though dead, to the last. The tame ones, of course, were too sagacious to hurt it with their tusks, and looked on with the most curious air of pity and contempt, as they gradually, despite its violent struggles, pushed it away from its

mother to a place where it could be properly secured and taken care of. Really its moans and endeavors to remain with its mother were quite affecting. It is too young to be weaned with safety, and will probably die; at least I am very much afraid so. I shall always feel an interest in the poor little animal in future, should it live; it was so devotedly and heroically brave, never attempting to leave its mother in order to procure its own escape, which it might easily have done unseen during the confusion.

THE TAPIR forms one of the links connecting the elephant with the hog. The snout is lengthened into a kind of proboscis like that of the elephant, but it is comparatively short, and has no finger-like appendage at the extremity. Many of the remaining

links are supplied by the various species of the fossil genus *Palæotherium*.



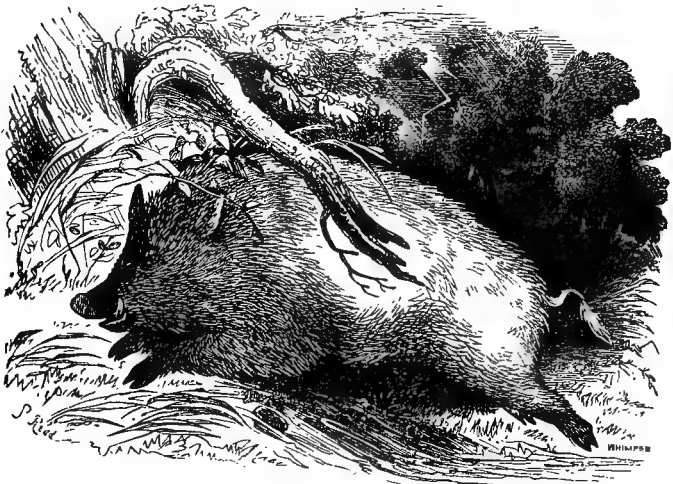
The Tapir.

The common Tapir is spread throughout the warmer regions of South America. It sleeps during the day, and wanders about at night in search of its food, which consists of

watermelons, gourds, and other vegetables. It is very fond of the water, and can remain below the surface for a considerable period. It is a very powerful animal, and as it is furnished with a very thick hide, it plunges through the brushwood, breaking its way through any obstacles that may oppose its progress.

Its disposition is gentle, but when annoyed it sometimes rushes at its antagonist and defends itself vigorously with its powerful teeth. The jaguar frequently springs on it, but is often dislodged by the activity of the Tapir, who rushes through the bushes immediately that it feels the claws of its enemy, and endeavors to brush him off against the thick branches. The height of the American Tapir is from five to six feet. The Malay Tapir is somewhat larger, and is known by the greyish white color of the loins and hind quarters, which give the animal an appearance as if a white horsecloth had been spread over it.

THE HOG is a genus of quadrupeds of the order *belluæ*. The front teeth in the upper jaw are four in number, converging; in the lower jaw they amount to six, projecting. In the upper jaw the teeth are canine, in number two, and rather short. Those of the lower jaw are of the same number, and long. The snout is truncated, prominent, movable; and the feet cloven. This genus is of a doubtful character, partly resembling the *pecora*, or cattle, and partly the *feræ*, or wild beasts. The former it resembles by its cloven hoofs, and the latter, in some degree, by its teeth; and yet differing very widely from both. It is striking, that the internal formation of the feet approaches nearly to that of the digitated quadrupeds, while other parts are peculiar to this genus alone. This genus forms a very singular and important link between three great families of the animal kingdom, namely, the whole-hoofed, the cloven-footed, and the digitated quadrupeds.



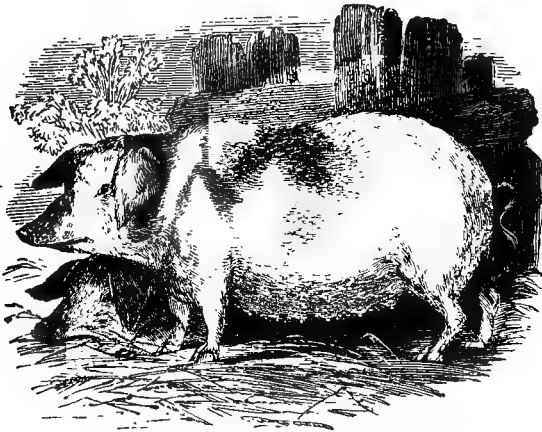
The Wild Boar.

THE WILD BOAR is an inhabitant of the woods. It lives on a variety of vegetables, such as roots, mast, and acorns. Occasionally it will devour animal food. It is considerably inferior in

size to the domestic hog. This evidently arises from the means of its subsistence being more precarious, less abundant, and less nutritious than the means of support brought within the reach of the domesticated species. The color is a dark brindled grey, and sometimes blackish. Between the bristles, next the skin, is a finer, or softer hair, of a kind of woolly or curling nature. The snout is somewhat longer than that of the domestic animal. The principal difference lies in the superior length and size of the tusks, which are often several inches long, and capable of inflicting the most severe and fatal wounds.

The hunting of the Wild Boar is at present one of the amusements of the great in Germany, Poland, and France. It is a chase not only of difficulty but danger; not on account of the swiftness, but the ferocity of the animal.

The Wild Boar was formerly a native of the British Isles. William the Conqueror punished with the loss of their eyes those who killed the Wild Boar. There is reason to believe that Epping

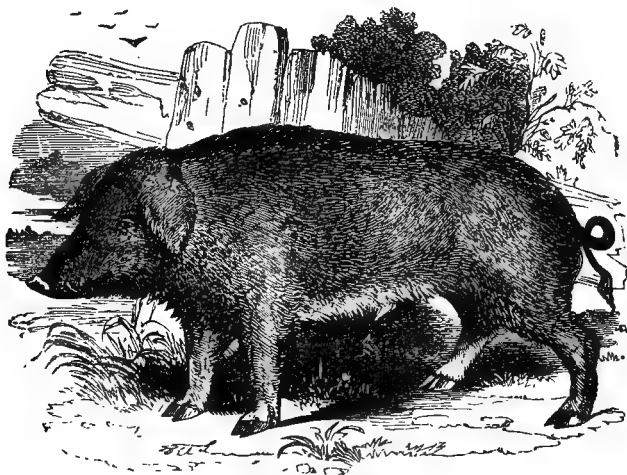


The Sow.

Forest, in remote ages, was the retreat of wild boars, as well as stags and fallow deer.

As the common, or domestic hog, is so well known, a

minute description is unnecessary. It differs from the wild boar in size, being much larger; while its tusks are smaller, and its ears of a more enlarged form, pointed and pendant. There is no quadruped equal to the hog in impurity of manners. It is ravenous, feeds on carrion, husks, will pick out sustenance from the foulest collections of impurity, will push its snout into the midst of the most offensive filth, with as much apparent delight as a human



The Domestic Boar.

being enjoys the refreshing fragrance of a full-blown rose. Often, too, this species will fall upon and devour their own young. They are so formed as to look towards the ground; they dig in the earth, and their chief delight is to wallow in the mire. The flesh of swine is very largely used for food in various parts of the world; though it is the most unhealthy meat which can be eaten.

THE BABYROUSSA, or *Ethiopian Hog*, is provided with small tusks in the lower jaw, and very large ones in the upper, which, in old boars, bend towards the forehead in the form of a semicircle. It has no fore-teeth, these not being necessary for its habits in seeking or using its ordinary sustenance; the nose is

broad, depressed, that is, bending downwards, and almost as hard as horn; its head is large and broad; beneath each eye there is a hollow formed of loose skin, very soft and wrinkled; under these there is a great lobe, or wattle, lying almost horizontal, broad, flat,



The Babouin.

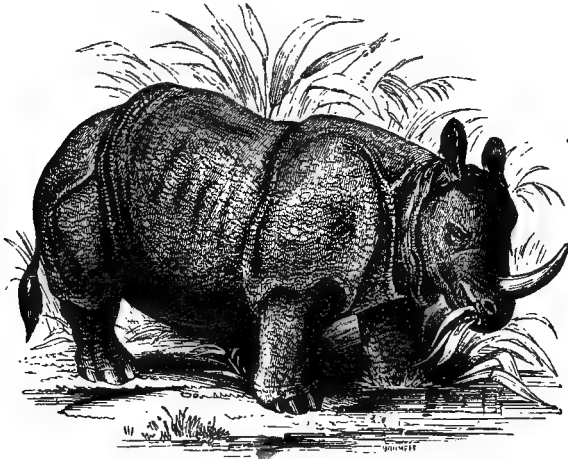
and rounded at the end, placed so as to intercept the view of anything below the animal. The mouth is small; the skin dusky; the bristles are disposed in *fasciculi*, or small bunches of five each; these are longest between the ears and on the beginning of the back, but in other parts of the body are thinly dispersed: the ears are large and sharp-pointed: the tail is slender and flat, not reaching lower than the thighs, and is covered with hair in separate little patches, which give it a very singular appearance: the body is longer and the feet shorter than in the common swine; in a domesticated state the length is about four feet nine inches, but in a wild state it grows to an enormous size. These animals inhabit the hottest parts of Africa, from Senegal to Congo, and are remarkably fierce and swift.

THE PECCARY is extremely numerous in all parts of Southern America. They go in herds of two or three hundred together; and unite, like the hogs, in each other's defence. They are particularly fierce when their young are attempted to be taken from them. They surround the plunderer, attack him without fear, and frequently make his life pay the forfeit of his rashness. When any of the natives are pursued by a herd in this manner, they frequently climb a tree to avoid them; while the Peccaries gather round the root, threaten with their tusks, and their rough bristles standing erect, as in the hog kind, they assume a very terrible appearance. In this manner they remain at the foot of the tree for hours together; while the hunter is obliged to wait patiently, and not without apprehensions, until they think fit to retire.

The Peccary prefers the hilly and mountainous parts of the country to the lowlands; it seems to delight neither in the marshes nor the mud, like our hogs; it keeps among the woods, where it subsists upon wild fruits, roots, and vegetables; it is also an unceasing enemy to the lizard, the toad, and all the serpent kinds, with which these uncultivated forests abound. As soon as it perceives a serpent, or a viper, it at once seizes it with its fore hoofs and teeth, skins it in an instant, and devours the flesh.

THE RHINOCEROS is an inhabitant of Bengal, Siam, parts of China, the large East India islands, Ethiopia, and found in the low countries reaching near the Cape of Good Hope. It delights in shady forests and the neighborhood of rivers and marshy places. It resembles the swine in being fond of wallowing in the mire; its affection to its young is peculiarly strong, and it brings forth only one at a time: it is quiet and inoffensive, but if provoked, it is furious and very dangerous. Its scent is most exquisite: it feeds on vegetables, and grunts like a hog. The horn of the single-horned animal is placed near the end of the nose, black, smooth, and sometimes three feet and a half long. It serves a double purpose, that of defence and that of grubbing up the ground for the purpose of obtaining substances on which it feeds. The upper lip is long, and hangs over the lower, ending in a point; the ears are large, erect, and pointed; the eyes small and dull; the skin a

naked and rough, lying about the neck in large folds; there is a fold also from the shoulders to the fore legs, and another from the hind part of the back to the thighs. The skin is so thick and



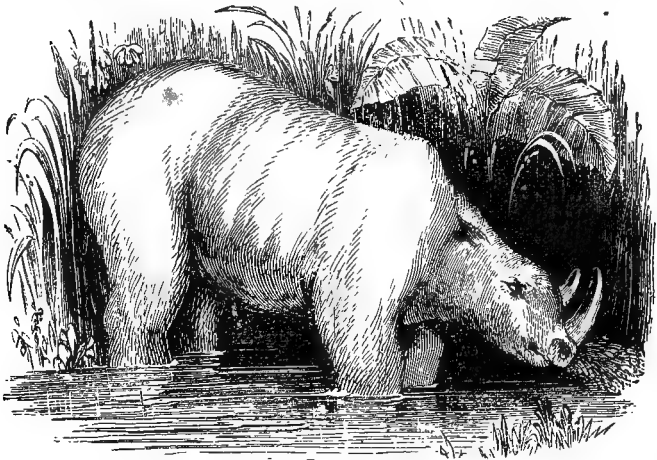
Single-Horned Rhinoceros.

strong as to resist the edge of a scymetar, and even turn off a musket-ball. The belly is low, the legs strong and thick, the hoofs divided into three parts, each pointing forward.

THE RHINOCEROS BICORNIS has two horns; it is found in various parts of Africa, and seems to be the kind which was known to the ancient Romans, and exhibited by them in their public shows and combats of animals. In size it is equal to the single-horned rhinoceros; in its habits and manner of feeding it is the same; but greatly differs in the appearance of the skin. The principal distinction consists in this, that the nose is provided with two horns, one of which is smaller than the other, and placed higher upon the front. These horns are said to be loose when the animal is in a quiet state, but the instant it is enraged, they become firm and immovable, and ready for combat.

Bruce, the celebrated traveller, has furnished an interesting

account of the manners of this animal. On the subject of feeding he says: "That besides the trees capable of most resistance, there are in the vast forests within the rains, trees of a softer consistence, and of a very succulent quality, which seem to be destined for his principal food. For the purpose of gaining the highest branches of these, his upper lip is capable of being lengthened out, so as to increase his power of laying hold with this in the same manner as the elephant does with his trunk: with this lip, and the assistance of his tongue, he pulls down the upper branches



Double-Horned Rhinoceros.

which have most leaves, and these he devours first: having stripped the tree of its branches, he does not therefore abandon it, but placing his snout as low in the trunk as he knows his horns will enter, he rips up the body of the tree, and reduces it to thin pieces as so many laths; when he has thus prepared it, he embraces as much of it as he can in his monstrous jaws, and twists it round with as much ease as an ox would do a root of celery, or any such pot-herb, or garden stuff."

Of the Rhinoceros there are four varieties in South Africa, distinguished by the Bechuanas by the names of the "borèle," or

black rhinoceros, the "keitloa," or two-horned black rhinoceros, the "muchocho," or common white rhinoceros, and the "kobaoba," or long-horned white rhinoceros. Both varieties of the black rhinoceros are extremely fierce and dangerous, and rush headlong and unprovoked at any object which attracts their attention. They never attain much fat, and their flesh is tough, and not much esteemed by the Bechuanas.

Their horns are much shorter than those of the other varieties, seldom exceeding eighteen inches in length. They are finely polished with constant rubbing against the trees. The skull is remarkably formed, its most striking feature being the tremendous thick ossification in which it ends above the nostrils. It is on this mass that the horn is supported. The horns are not connected with the skull, being attached merely by the skin, and they may thus be separated from the head by means of a sharp knife. They are hard, and perfectly solid throughout, and are a fine material for various articles, such as drinking cups, mallets for rifles, handles for turners' tools, etc., etc. The horn is capable of a very high polish. The eyes of the Rhinoceros are small and sparkling, and do not readily observe the hunter, provided he keep to leeward of them. The skin is extremely thick, and only to be penetrated by bullets hardened with solder. During the day, the Rhinoceros will be found lying asleep, or standing indolently, in some retired part of the forest, or under the base of the mountains, sheltered from the power of the sun by some friendly grove of umbrella-topped mimosas. In the evening, they commence their nightly ramble, and wander over a great extent of country. They usually visit the fountains between the hours of nine and twelve o'clock at night, and it is on these occasions that they may be most successfully hunted, and with the least danger. The Black Rhinoceros is subject to paroxysms of unprovoked fury, often ploughing up the ground for several yards with its horn, and assaulting large bushes in the most violent manner. On these bushes they work for hours with their horns, at the same time snorting and blowing loudly; nor do they leave them in general until they have broken them into pieces. All the four varieties delight to roll and wallow

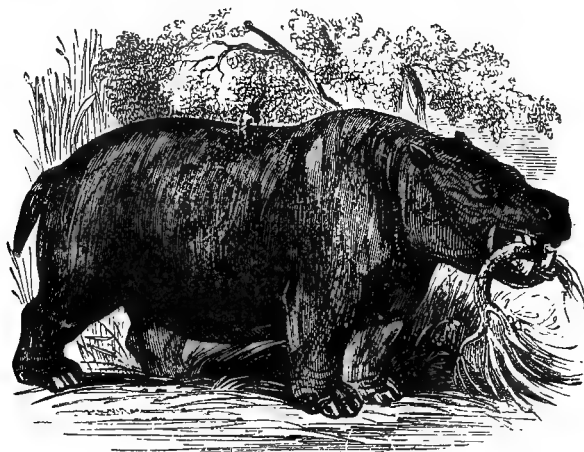
in mud, with which their rugged hides are encrusted. Both varieties of the Black Rhinoceros are much smaller and more active than the white, and are so swift that a horse with a rider on its back can rarely overtake them. The two varieties of the White Rhinoceros are so similar in habits, that the description of one will serve for both, the principal difference consisting in the length and set of the anterior horn; that of the common White Rhinoceros averaging from two to three feet in length, and pointing backwards; while the horn of the long-horned White Rhinoceros often exceeds four feet in length, and inclines forward from the nose.

Both these varieties of Rhinoceros attain an enormous size, being the animals next in magnitude to the elephant. They feed solely on grass, carry much fat, and their flesh is excellent, being preferable to beef. They are of a much milder and more inoffensive disposition than the Black Rhinoceros, rarely charging their pursuer. Their speed is very inferior to that of the other varieties, and a person well mounted can overtake and shoot them.

THE HIPPOPOTAMUS is above seventeen feet long, from the extremity of the snout to the insertion of the tail; sixteen feet in circumference round the body, and seven feet high: the head is four feet long, and nine in circumference. The jaws open about two feet wide, and the cutting-teeth, of which it has four in each jaw, are over a foot long. Its feet in some measure resemble those of the elephant, and are divided into four parts. The tail is short, flat, and pointed; the hide is amazingly thick, and though not capable of turning a musket ball, is impenetrable to the blow of a sabre; the body is covered over with a few scattered hairs of a whitish color. The whole figure of the animal is a cross between that of an ox and a hog, and its cry is a mixture of the bellowing of the one, and the grunting of the other.

It chiefly resides at the bottom of the great rivers and lakes of Africa, the Nile, the Niger, and the Zara; where it leads an indolent kind of life, and seems seldom disposed for action, except when excited by the calls of hunger. Upon such occasions, three or four of them are often seen at the bottom of a river, near

some cataract, forming a kind of line, and seizing upon such fish as are forced down by the violence of the stream. In that element they pursue their prey with great swiftness and perseverance; they swim with much force, and remain at the bottom for thirty or forty minutes without rising to take breath. They traverse the bottom of the stream, as if walking upon land, and make a terrible devastation where they find a great plenty of prey. But it often



The Hippopotamus.

happens that this animal's fishy food is not supplied in sufficient abundance; it is then forced to come upon land, where it is an awkward and unwieldy stranger; it moves but slowly, and, as it seldom forsakes the margin of the river, it sinks at every step it takes. If attacked on land, and incapable of vengeance from the swiftness of its enemy, it immediately returns to the river, plunges in head foremost, and after a short time rises to the surface, loudly bellowing, either to invite or intimidate the enemy; but though the Negroes will venture to attack the shark or the crocodile in their natural element, and there destroy them, they are too well apprised of the force of the Hippopotamus to engage it.

As the Hippopotamus lives upon fish and vegetables, so it is probable the flesh of terrestrial animals may be equally grateful: the natives of Africa assert, that it has often been found to devour children and other creatures it was able to surprise upon land; yet as it moves but slowly, almost every creature endued with a common share of swiftness is able to escape it; and, therefore, it seldom ventures from the river side, except when pressed by the necessities of hunger, or of bringing forth its young.

The female always comes upon land to bring forth, and it is supposed that she seldom produces above one at a time. Upon this occasion these animals are particularly timorous, and dread the approach of a terrestrial enemy. The instant the parent hears the slightest noise it dashes into the stream, and the young one is seen to follow it with equal alacrity. The young are said to be excellent eating; but the Negroes, to whom nothing that has life comes amiss, find an equal delicacy in the old.

CHAPTER VII.

DIVISION I.—VERTEBRATES.

CLASS I.—MAMMALS.

ORDER IV.—ANIMALS OF THE WHALE TRIBE.

THE CETACEA, or animals of the Whale tribe, are distinguished by having no posterior extremities, and their anterior so constructed as to answer the purposes of fins. In this order are included whales, porpoises, dolphins, and narwhals, the grampus, manati, and dugong.

The whales are usually confounded with the class of fishes, which they resemble in many particulars of external appearance, as well as in the circumstance of residing always in the water. In point of structure, however, they clearly belong to the class Mammalia, since they breathe air by means of lungs, are warm-blooded, produce their young alive, and nourish them with their own milk. Instead of fore feet, they are furnished with fins or oars, which, however, are supported by bones similar to those of the fore feet of quadrupods. They have no hind feet, but their body terminates in a thick tail, which supports a fin or oar. This fin is horizontal, whilst that of fishes is vertical.

A few of the Cetacea are herbivorous, and are frequently obliged to leave the water and crawl upon the shore in search of food. Such are the manati, usually called the sea-ox and sea-cow, and the dugong. They have upon their fins the rudiments of claws, which are of service to them in their motions upon the land, and with which they are even able to carry their young. The mammæ, from which they nurse their young, are upon the chest, like those of the human species; and they have, around the face, a growth of hair which resembles, in a slight degree, that of man. Hence the appearance they present when the upper part

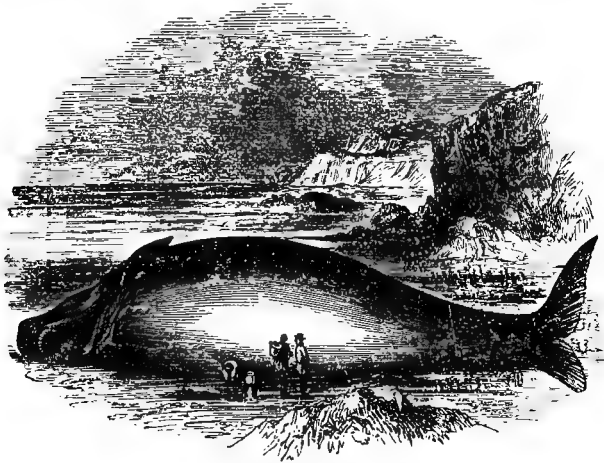
of their bodies is elevated above the water, bears some resemblance to that of mankind, and they have, consequently, been called seaapes. It is probable that these animals, being seen by the credulous, the ignorant, the timid, or the superstitious, gave rise to the ancient fables of the tritons and sirens, and, in modern times, to the various unfounded stories of mermen and mermaids.

As these animals breathe the air, it is obvious that they cannot bear to be any long time under water. They are constrained, therefore, every two or three minutes, to come up to the surface to take breath, as well as to spout out through their nostril (for they have but one) that water which they sucked in while gaping for their prey. This conduit, by which they breathe, and also throw out the water, is placed in the head, a little before the brain. Though externally the hole is but single, it is internally divided by a bony partition, which is closed by a sphincter muscle on the inside, that, like the mouth of a purse, shuts it up at the pleasure of the animal. There is also another muscle or valve, which prevents the water from going down the gullet. When, therefore, the animal takes in a certain quantity of water, which is necessary to be discharged and separated from its food, it shuts the mouth, closes the valve of the stomach, opens the sphincter that kept the nostril closed, and then breathing strongly from the lungs, pushes the water out by the effort, as we see it rise by the pressure of air in a fire-engine.

THE GREAT GREENLAND WHALE is the fish, for taking which such preparations are made in different parts of Europe and the United States. It is a large, heavy animal, and the head alone makes a third of its bulk. It is usually found from sixty to seventy feet long. The fins on each side are from five to eight feet, composed of bones and muscles, and sufficiently strong to give the great mass of body which they move, speed and activity. The tail, which lies flat on the water, is above twenty-four feet broad; and, when the fish lies on one side, its blow is tremendous. The skin is smooth and black, and, in some places, marbled with white and yellow; which, running over the surface, has a very beautiful

effect. This marbling is particularly observable in the fins and the tail.

The Whale makes use only of the tail to advance itself forward in the water. This serves as a great oar to push its mass along; and it is surprising to see with what force and celerity its enormous bulk cuts through the ocean. The fins are only used



The Greenland Whale.

for turning in the water, and giving a direction to the velocity impressed by the tail. The female also makes use of them, when pursued, to bear off her young, clapping them on her back, and supporting them by the fins on each side from falling.

The outward or scarf skin of the Whale is no thicker than parchment; but this removed, the real skin appears, of about an inch thick, and covering the fat or blubber that lies beneath: this is from eight to twelve inches in thickness; and is, when the fish is in health, of a beautiful yellow. The muscles lie beneath; and these, like the flesh of quadrupeds, are very red and tough.

The cleft of the mouth is above twenty feet long, which is near one-third of the animal's whole length; and the upper jaw

is furnished with barbs, that lie, like the pipes of an organ, the greatest in the middle, and the smallest to the sides. These compose the whalebone; the longest spars of which are found to be not less than eighteen feet; the shortest, being of no value, are thrown away. The tongue is almost immovably fixed to the lower jaw, seeming one great lump of fat; and, in fact, it fills several hogsheads with blubber. The eyes are not larger than those of an ox; and when the crystalline-humor is dried, it does not appear larger than a pea. They are placed towards the back of the head, being the most convenient situation for enabling them to see both before and behind; as also to see over them, where their food is principally found. They are guarded by eyelids and eyelashes, as in quadrupeds; and they seem to be very sharp-sighted.

Nor is their sense of hearing in less perfection: for they are warned at great distances, of any danger preparing against them. It would seem as if Nature had designedly given them these advantages, as they multiply little, in order to continue their kind. It is true, indeed, that the external organ of hearing is not perceptible, for this might only embarrass them in their natural element: but as soon as the thin scarf-skin above mentioned is removed, a black spot is discovered behind the eye, and under that is the auditory canal, that leads to a regular apparatus for hearing. In short, the animal hears the smallest sounds at very great distances, and at all times, except when it is spouting water; which is the time that the fishers approach to strike it.

For the capture of this animal, a number of ships leave the United States, England, France, Russia, etc., reaching the Polar Seas about the end of April. When arrived at their destination, a careful look-out is kept from the mast-head for "fish," which are usually first observed by the column of steam and water that the whale sends into the air from its nostrils. At the welcome sound "There she blows," the whole crew starts into activity; the boats, which are always kept hanging over the side of the ship, furnished ready for action, are instantly manned and lowered into the water, and the boat springs off in chase of the whale. The harpooner, whose station is in the bow, examines his implements carefully,

tries the edge of the harpoon, and sees that the rope is properly coiled, as the slightest entanglement would upset the boat, or might even drag it below water.

It will be as well just to notice the different weapons used in the whale fishery. The first and most important is the harpoon, a kind of spear with a large barbed head, the shape of which is not very unlike the flukes of an anchor. The edges of the barbs are kept very sharp, as otherwise the harpoon would not penetrate beyond the blubber, and the whale would consequently escape. The head of the harpoon is not made of steel, as inexperienced persons would imagine, but of soft iron, so soft that it can be scraped to an edge with a knife. This is fixed to a wooden handle, by which the harpooner holds it. In some vessels, the harpoon is fired at the whale from a small cannon placed in the bow of the boat. There are some very ingenious harpoons, one of which, intended to be fired from a gun, has its barbs joined to the head by a hinge, and held apart with a spring, so that when a whale is struck the barbs collapse until the force of the blow is expended, when the spring expands them and holds the whale firmly. The common harpoon, however, is the weapon usually employed.

To the harpoon is fastened a long and very tough line, about 4000 feet in length. This line is kept ready coiled in a tub at the head of the boat, and great care is taken to prevent it from being entangled. It runs over a kind of pulley, as the friction is so great when the alarmed whale starts off, that the rope when out of its place has repeatedly set the gunwale of the boat on fire. At Deptford, some years back, might be seen a boat, the head of which had been quite cut off by the rope. A bucket of water is therefore always kept at hand to throw on the rope. When a whale is struck, it sometimes runs out with the whole of the line, in which case the line of another boat is fastened to it, and sometimes a whale has carried off three miles of line with it. When the whale begins to slacken the line, it is immediately recoiled in the tub, so as to be always under the command of the pursuers.

The use of the harpoon is merely to hold the whale; it does not enter deep, and causes the animal but little inconvenience,

as a whale has often broken its line and escaped with the harpoon sticking in its back, and been afterwards recaptured, apparently none the worse for its adventure. In order to kill the whale the fishermen have another weapon, called a "lance." This is a long, slender, steel weapon, with a very sharp head, without barbs, as the men have to withdraw the lance as fast as they can after it has pierced a vital part. With these few and simple weapons the fishers contrive to secure the monster of the waters—a beautiful instance of the superiority of reason over brute strength; for as the expert angler secures a large and strong fish with a single hair, utterly inadequate to bear half the weight of the creature it holds, so the whale-fisher, with a few small weapons, achieves a task which may be compared to a mouse attacking and killing a wolf with a reel of thread and a crochet needle.

The boats always approach the whale from behind, lest the expected prey should see them and escape. When within a few yards the harpooner throws his weapon at the whale, so as to pierce through the mass of blubber, and hold fast in the flesh. The wounded animal instantly dashes off, taking the line with it. When it has been under water for some time, it is forced to come to the surface to breathe. The fishers mark the place where it rises, and thrust their long lances deep into its body, inflicting mortal wounds. Blood mixed with water is now discharged from the whale's nostrils or "blow-holes," a sure sign that it will soon die. Presently streams of blood are thrown up, coloring the sea, and frequently drenching the crews of the boats, and after a few violent struggles the whale turns over on its side and dies.

The enormous carcass is now joyously towed to the ship and preparations are made for "flensing," or cutting off the useful parts. Strong ropes are attached to the head and tail, and men wearing shoes armed with spikes, to prevent slipping, commence the process by fastening ropes to its head and tail. A strong hook is then fixed into the fat near the neck, called the "kent," as it is used for "kenting," or turning the whale over. In this hook is fastened a rope, passing through a pulley at the mainmast head, and fixed to a windlass on deck. The blubber is then taken

off the upper side by "blubber spades." The blocks of blubber, called "slips," are then hauled up on deck by means of ropes called "speck tackles," speck being the German word for fat or bacon. When the blubber is all stripped from the upper side, the men turn the whale partly round by hauling at the rope fastened to the "kent." Then then cut out the whalebone with knives made for that purpose. Lastly, the "kent" itself is stripped off, and the whale left to the sharks and gulls, who have been helping themselves very liberally while the flensing was going on. The shovel-nosed shark sometimes scoops out semicircular pieces as large as a man's head.

When the crew have time, the blubber, which has been stowed away in a place with a not very polished name, is "made off," that is, carefully stripped of the pieces of skin and muscle adhering to it, cut into moderately sized pieces, and packed in casks until wanted. The oil is extracted by boiling the blubber in large coppers; a most unsavory occupation, but a very pleasant one to the crew, if they take that duty upon themselves. The refuse blubber is used as fuel, so that there is no waste.

THE CACHALOT.—The chase of the Cachalot is similar to that of the Greenland Whale, and need not be described. It is attended with more danger, as the terrific row of teeth with which the lower jaw of the Cachalot is armed, is not unfrequently employed in biting the boat. In the Ashmolean Museum at Oxford is an under jaw-bone of this whale, sixteen and a half feet in length, containing forty-eight huge teeth. Besides this method of defence, it has a very unpleasant habit of swimming off to a distance, and then rushing at the boat with its head, thereby knocking it to pieces. One of these whales actually sank a ship by three or four blows from its head.

This tribe is not of such enormous size as the whale, properly so called, not being above sixty feet long, and sixteen feet high. In consequence of their being more slender, they are much more active than the common whale; they remain a longer time at the bottom; and afford a smaller quantity of oil. As in the common whale the head was seen to make a third part of its bulk,

so in this species the head is so large as to make one half of the whole. The tongue of this animal is small, but the throat is very formidable; and with very great ease it could swallow an ox. In the stomach of the Whale scarce anything is to be found; but in that of the Cachalot there are loads of fish of different kinds; some whole, some half-digested, some small, and others eight or nine feet long. The Cachalot is, therefore, as destructive among lesser fishes as the Whale is harmless; and can at one gulp swallow a shoal of fishes down its enormous gullet. Linnæus tells us that this fish pursues and terrifies the dolphins and porpoises so much, as often to drive them on shore.

Ambergris, so long a riddle to all inquirers, is now found to be produced in the interior of the Cachalot. This substance is of the consistency of wax, inflammable, and gives out a kind of musky odor. It was once in great repute as a medicine, but is now only used as a perfume. Spermaceti is obtained from the head of the Cachalot, and it is this substance that causes the immense size of the head. When the whale is killed, a hole is made in the upper part of the head, and the spermaceti is baled out with buckets. When just procured it is almost fluid, but is rendered solid and transparent by being first drained of its oil, then boiled in water, and lastly set to cool in wide pans, where it soon assumes the white flaky appearance so well known in this country. The layer of blubber is thin, but yields a fine and valuable oil.

THE DOLPHIN is, like the whale, a warm-blooded animal, suckles its young, and is forced to come to the surface in order to breathe. Its snout is very long, and is apparently used for capturing such fish, and other animals, as live in the mud. The length is from six to ten feet.

THE PORPOISE.—These animals may be observed in plenty playing their absurd antics off the coasts of the United States. There are numbers of them off the Nore, a place which they frequent greatly, as it is the mouth of a river, and they find more food there than in the open sea. They tumble at the surface of the water for the purpose of breathing. The voracity of the Porpoise is very great. It feeds on various fishes, but its great feasts

are held when the periodical shoals of herrings, pilchards, and other fish arrive on the coasts. In the pursuit of its prey, it frequently ventures some distance up a river, and is then often taken in nets by the fishermen. The teeth of this animal are very numerous, and interlock when the jaws are closed, so that the fish when once seized cannot escape. Its length is about five feet, its color a rich black, becoming white on the under side.

THE NARWHAL is not so large as the whale, not being above sixty feet long. Its body is slenderer than that of the whale, and its fat not in so great abundance. But this great animal is sufficiently distinguished from all others of the deep by its tooth or teeth, which stand pointing directly forward from the upper jaw, and are from nine to fourteen feet long. In all the variety of weapons with which Nature has armed her various tribes, there is not one so large or so formidable as this. It is as straight as an arrow, about the thickness of the small of a man's leg, wreathed in the manner we sometimes see twisted bars of iron; it tapers to a sharp point; and is whiter, heavier, and harder than ivory. It is generally seen to spring from the left side of the head directly forward in a straight line with the body; and its root enters into the socket above a foot and a half. In a skull to be seen at Hamburg there are two teeth, which are each above seven feet long, and are eight inches in circumference. When the animal, possessed of these formidable weapons, is urged to employ them, it drives directly forward against the enemy with its teeth, that, like protended spears, pierce whatever stands before them.

The use of these tusks is not known; some supposing that they are employed to dig up sea-weeds, etc., on which the Narwhal feeds, and some imagining that the living prey is first transfixed and then eaten. Be this as it may, as a weapon the tusk is not to be despised, as the strength and rapidity of the Narwhal are very great. Instances are on record, of the thick oak timbers of a ship being pierced by the ivory tusk of this creature. The Greenlanders employ this ivory in the manufacture of spears, arrows, hooks, etc. They take the Narwhal by a kind of harpoon attached

to a line, with a buoy at its extremity. The use of the buoy is to harass and retard the Narwhal when struck, and to give notice when it is about to rise.

THE MANATI is somewhat shaped in the head and the body like a seal; it has also the fore legs or hands pretty much in the same manner, short and webbed, but with four claws only; these also are shorter in proportion than in the former animal, and placed nearer the head; so that they can scarcely assist its motions upon land. But it is in the hinder parts that it chiefly differs from all others of the seal kind; for the tail is perfectly that of a fish, being spread out broad like a fan, and wanting even the vestiges of those bones which make the legs and feet in others of its kind. The largest of these are about twenty-six feet in length; the skin is blackish, very tough, and hard; when cut, as black as ebony; and there are a few hairs scattered, like bristles, of about an inch long. The eyes are very small, in proportion to the animal's head; and the ear-holes, for it has no external ears, are so narrow as scarce to admit a pin's head. The tongue is so short, that some have pretended it has none at all; and the teeth are composed only of two solid white bones, running the whole length of both jaws, and formed merely for chewing, and not tearing its vegetable food. The female has breasts placed forward, like those of a woman; and she brings forth but one at a time: this she holds with her paws to her bosom; there it sticks, and accompanies her wherever she goes.

This animal can scarcely be called amphibious, as it never entirely leaves the water, only advancing the head out of the stream to reach the grass on the river sides. Its food is entirely upon vegetables; and, therefore, it is never found far in the open sea, but chiefly in the large rivers of South America; and often above two thousand miles from the ocean. It is also found in the seas near Kamschatka, and feeds upon the weeds that grow near the shore. These animals, when unmolested, keep together in large companies, and surround their young ones. They bring forth most commonly in autumn; and it is supposed they go with young eighteen months, for the time of generation is in spring.

The Manati has no voice nor cry, for the only noise it makes is by fetching its breath. Its internal parts somewhat resemble those of a horse; its intestines being longer, in proportion, than those of any other creature, the horse only excepted.

CHAPTER VIII.

DIVISION I.—VERTEBRATES.

CLASS II.—BIRDS.

GENERAL CHARACTERISTICS.

NATURE has adapted the organic structure of Birds to the purposes of flight. The long neck is capable of great extent and variety of motion; and the horny beak which is affixed to the mouth, is destitute of teeth. The breast-bone, which is very large and strong, in order to support the action of the wings, is supplied in front with a large projection, for the attachment of those strong muscles which put the wings in motion. The wings, composed of nearly the same number and kinds of bones as the anterior extremities of quadrupeds, are covered with long and wide feathers or quills, which are so arranged as to be capable of acting upon the air, raising the bird from the ground, and conveying it from place to place. The tail is furnished with feathers that may be stretched out in the form of a fan, and serve to balance the animal, as well as to direct its flight. The feet are generally furnished with four claws, but sometimes with only three. The bones of the leg and thigh are very similar to those of quadrupeds.

Like the Mammalia, the heart of birds is constructed with four cavities, two auricles, and two ventricles. Their lungs, which are commonly called the *sole*, are affixed to the sides of the ribs and back, and cannot be dilated or contracted to any great extent; but, to compensate for this seeming defect, Nature has furnished

them with membranous air-cells, which occupy a very considerable portion of the chest and abdomen, and have direct and uninterrupted communication with the lungs. The long cylindrical bones are so many air-tubes, and even the flat bones are occupied by a cellular bony net-work, filled with air. In certain birds, the large bills, even the very quill feathers, are in receipt of more or less air from the lungs, at the pleasure of the animal. Lightness of the body being indispensable, the birds which fly highest and most rapidly, have the largest supply of air-cells.

In these particulars, birds pretty much resemble each other in their internal conformation; but there are some varieties which we should more attentively observe. All birds have, properly speaking, but one stomach; but this is very different in different kinds. In all the rapacious kinds, that live upon animal food, as well as in some of the fish-feeding tribe, the stomach is peculiarly formed. The œsophagus, or gullet, in them, is found replete with glandulous bodies, which serve to dilate and macerate the food, as it passes into the stomach, which is always very large in proportion to the size of the bird, and generally wrapped round with fat, in order to increase its warmth and powers of digestion.

Granivorous birds, or such as live upon fruits, corn, and other vegetables, have their intestines differently formed from those of the rapacious kind. Their gullet dilates just above the breast bone, and forms itself into a pouch or bag, called the crop. This is replete with salivary glands, which serve to moisten and soften the grain and other food which it contains. These glands are very numerous, with longitudinal openings, which emit a whitish and a viscous substance. After the dry food of the bird has been macerated for a convenient time, it then passes into the belly, where, instead of a soft, moist stomach, as in the rapacious kind, it is ground between two pair of muscles, commonly called the gizzard, covered on the one side with a stony, ridgy coat, and almost cartilaginous. These coats rubbing against each other, are capable of bruising and attenuating the hardest substances, their action being often compared to that of the grinding teeth in man and other animals. Thus the organs of digestion are in a manner

reversed in birds. Beasts grind their food with their teeth, and then it passes into the stomach, where it is softened and digested. On the contrary, birds of this sort first macerate and soften it in the crop, and then it is ground and comminuted in the stomach or gizzard. Birds are also careful to pick up sand, gravel, and other hard substances, not to grind their food, as has been supposed, but to prevent the too violent action of the coats of the stomach against each other.

This structure, however, is not fully carried out in all birds. It exists in its most complete state in those which are granivorous, or which live upon fruit, seed, etc.; but in the carnivorous birds, or those which feed upon flesh or fish, the dilatation, constituting the crop, is very small or altogether wanting; and the gizzard is a thin and weak organ, hardly to be distinguished from the second or membranous stomach. This is a difference corresponding to that which has been described as existing in the Mammalia; among which those feeding upon vegetable food are provided with powerful and extensive organs of digestion, whilst in those living upon animal food they are comparatively weak, and limited in extent.

The sight of birds is very perfect. They possess the power of seeing objects distinctly, when very remote. Birds of prey are particularly remarkable for the very great distance at which they perceive their prey, and the accuracy with which they direct their flight towards it. Besides the upper and under eyelids, birds have a third, which is semi-transparent, and serves the purpose of protecting the eye from the contact of external bodies, or from too powerful light, whilst, at the same time, it does not prevent them from distinguishing the objects around them. This membrane is situated at the inner angle of the eye, and is drawn over the globe of it, like a curtain, at will. It is by means of this protection, that the eagle is enabled to look steadily at the sun.

The senses of hearing and smelling are also possessed in considerable perfection by birds; the former more particularly by the nocturnal, and the latter by those feeding principally upon carrion, the scent of which they are thus able to trace to an im-

nense distance. Their tongue being chiefly of bone or cartilage, they have little delicacy of taste; and the sense of touch, judging from the structure of their claws and beak, which would be the organs for its exercise, must be exceedingly imperfect.

Most birds construct nests, and some of them with much care, labor, and ingenuity. In these they deposit their eggs, and hatch them by the heat of their own bodies. Some few lay them upon the sand, and leave them to be hatched by the heat of the sun. Their care and affection for their young are well known, and, in providing for and protecting them, they exhibit many indications of sagacity or of feeling. They are capable of some slight improvements by education and imitation, but are, on the whole, in this respect decidedly inferior to quadrupeds. The class of birds is divided, according to their structure and habits of life, into six orders.

Birds shed their feathers at regular periods. This operation is called moulting, and is performed by Nature in the following manner: The quill, or feather, when first protruded from the skin, and come to its full size, grows harder as it grows older, and receives a kind of periosteum or skin round the shaft, by which it seems attached to the animal. In proportion as the quill grows older, its sides, or the bony pen-part, thicken; but its whole diameter shrinks and decreases. Thus, by the thickening of its sides, all nourishment from the body becomes more sparing; and, by the decrease of its diameter, it becomes more loosely fixed in its socket, till at length it falls out. In the mean time, the rudiments of an incipient quill are beginning below. The skin forms itself into a little bag, which is fed from the body by a small vein and artery, and which every day increases in size, till it is protruded. While the one end vegetates into the beard or vane of the feather, that part attached to the skin is still soft, and receives a constant supply of nourishment, which is diffused through the body of the quill by that little light substance which we always find within when we make a pen. This substance, which as yet has received no distinctive name, serves the growing quill as the umbilical artery does an infant in the womb, by supplying it with nourish-

ment, and diffusing that nourishment over the whole frame. When, however, the quill has come to its full growth, and requires no further nourishment, the vein and artery become less and less, till at last the little opening by which they communicated with the quill becomes wholly obliterated; and the quill, thus deprived, continues in its socket for some months, till in the end it shrinks, and leaves room for a repetition of the same process of nature as before.

The moulting season commonly obtains from the end of summer to the middle of autumn. The bird continues to struggle with this malady during the winter; and nature has kindly provided, that when there are the fewest provisions, that then the animal's appetite shall be least craving. At the beginning of spring, when food begins again to be plentiful, the animal's strength and vigor return. It is then that the abundance of provisions, aided by the mildness of the season, incite it to love, and all nature seems teeming with life, and disposed to continue it.

CHAPTER IX.

DIVISION I.—VERTEBRATES.

CLASS II.—BIRDS.

ORDER I.—BIRDS OF PREY.

THESE correspond, in many respects, with the carnivorous animals among quadrupeds. They are distinguished by their strong, hooked beaks, and their crooked and powerful talons, by means of which they are enabled to prey upon other birds, and even upon some of the smaller quadrupeds and reptiles. They are divided into the diurnal and the nocturnal. The diurnal include the vultures, eagles, falcons, hawks, buzzards, and kites. The only nocturnal bird of prey is the owl. The vultures are heavy and ferocious birds, feeding principally upon carrion. They are so voracious, and fill themselves to such an extent, that they become quite stupid and inactive, and during digestion a fetid humor distils from their nostrils. The eagles, falcons, etc., prefer living animals for their food, and never prey upon carrion, unless driven to it by hunger. The number of their species is very great, and they are observed to vary considerably in their plumage, according to their age and other circumstances. The females are generally a third part larger than the males, and are likewise superior in beauty of shape and plumage.

I.—DIURNAL BIRDS OF PREY.

THE CONDOR inhabits the Andes of South America, always choosing its residence on the summit of a solitary rock. It appears that this bird does not build any nest, but lays its two white eggs on the bare rock, after the manner of many sea birds. It is a very large bird, but by no means the gigantic creature some former naturalists relate, with wings twenty feet in length, and

powerful enough to carry off a horse. The real expanse of wing is about nine or ten feet, and the length of the bird about four



The Condor.

feet. It is, however, exceedingly strong, and very tenacious of life. Two condors will attack and kill the llama, or even the puma; for by their repeated buffeting and pecking they weary it so completely that it yields to their perseverance.

THE VULTURE.—Of this voracious bird there are several kinds, the Bearded Vulture, the Great California Vulture, the King Vulture, the Griffon Vulture, and the

Egyptian Vulture. There is something unsightly and very forbidding in their appearance. Their neck is long and almost bare. Their legs are covered with feathers to the very feet, each of which

has four toes, three before and one behind. They select lofty rocks as a place for building their nests. It is believed that their age sometimes extends to a century. Their sight is remarkably quick, and their scent most acute. It is considered that they can detect dead carcasses at the distance of fifty miles. They delight above all to feed upon the dead bodies of human beings, but feed on nothing that has life.



The Great California Vulture.

The more corrupted and putrefying the carcass, the greater their enjoyment, and the greater the relish with which they devour it. They follow armies, in expectation of feasting upon the bodies of the slain. It is said they are great enemies to serpents.

THE BEARDED VULTURE inhabits most mountain ranges, and

is very common in the Alps of Switzerland, and Germany, where, from its depredations on the kids and lambs, it has earned its name of Lammergeyer. Although called the "Bearded" Vulture, it is not strictly a vulture, as its head and neck are feathered, and it rejects putrid flesh, unless hard pressed by hunger. It destroys hares, and young or sickly sheep and goats, nor, when rendered fierce by hunger, does it fear to attack the adult chamois, or even man. It is said to destroy the larger animals by watching until



Bearded Vulture.

they are near the brink of a precipice, and then suddenly driving them over the rocks by an unexpected swoop. In this manner the strong and swift chamois falls a victim to the craft of its winged foe, and instances are not wanting where the chamois hunter himself has been struck from a narrow ridge into the valley beneath by a blow from this ferocious bird. It is exceedingly bold, and shows but little fear of man. While Bruce was preparing his dinner on the summit of a mountain, one of these birds, after scalding its feet in several unavailing attempts to extract some meat out of the boiling water, actually seized a piece from a platter, and went off with it. The name of "Bearded" Vulture is given to it on account of the long tuft of hairs with which each nostril is clothed. The length of its body is about four feet, and the expanse of its wings from nine to ten.

THE KING VULTURE, which is found among the Andes in South America, is a bird about the size of the turkey-cock, chiefly remarkable for the odd formation of the skin of the head and neck, which is bare. The skin arises from the base of the bill, and is of an orange color; from whence it stretches on each side of the head; from thence it proceeds, like an indented comb, and falls on either side, according to the motion of the head. The eyes are surrounded by a red skin, of a scarlet color; and the iris has the color and lustre of pearl. The head and neck are without

feathers, covered with a flesh-colored skin on the upper part, a fine scarlet behind the head, and a dusker colored skin before; fur-



The King Vulture.

ther down, behind the head, arises a little tuft of black down, from whence issues and extends beneath the throat, on each side, a wrinkled skin, of a brownish color, mixed with blue, and reddish behind: below, upon the naked part of the neck, is a collar, formed by soft, longish feathers, of a deep ash color, which surround the neck, and cover the breast before. Into this collar the bird sometimes withdraws its whole neck, and sometimes a part of its head; so that it looks as if it had withdrawn

the neck into the body. Those marks are sufficient to distinguish this bird from all others of the vulture kind; and it cannot be doubted, but that it is the most beautiful of all this deformed family: however, neither its habits nor instinct vary from the rest of the tribe; being like them a slow, cowardly bird, living chiefly

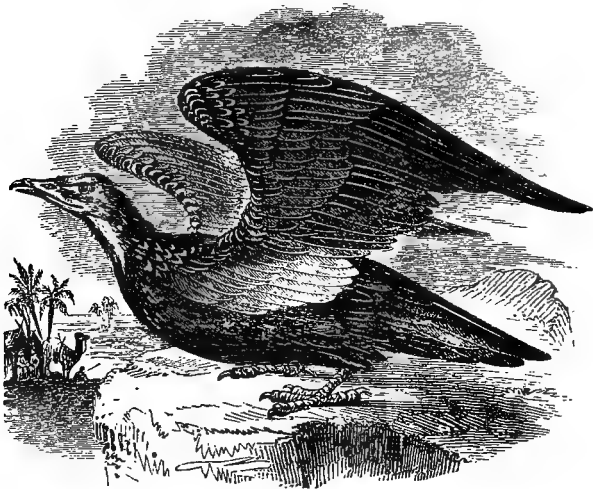


The Griffon Vulture.

upon rats, lizards, and serpents; and upon carrion or excrement, when it happens to be in the way. The flesh is so bad, that even savages themselves cannot abide it.

THE GRIFFON VULTURE is found in almost all parts of the old world. It is one of the largest of its group, measuring upwards of four feet in length. Like most of the vultures, it does not appear to move its wings while flying, but soars on expanded pinions in large circles, apparently gaining the necessary impetus by the movements of its head and body, just as an accomplished skater uses but little force in his various evolutions, an imperceptible inclination of the head or sway of the body sufficing to keep up the impetus gained at starting, and to bring him round in any direction he chooses.

THE EGYPTIAN VULTURE.—The vultures peculiar to Egypt light in great flocks on the lay-stalls near the city of Cairo. There



Egyptian Vulture.

they feed promiscuously with dogs and other beasts on dead carcases and the most offensive offal. Mr. Hasselquist says, "that they assemble with the kites every morning and evening in the

square called *Robneli*, below the castle, there to receive the alms of fresh meat left them by the legacies of wealthy and great men." This is extraordinary indeed, Mohammedans leaving legacies to vultures!

The appearance of this bird is peculiarly horrid and repulsive. The face is naked and wrinkled; the eyes are large and black; the beak black and hooked; the talons large and extending ready for prey; and the whole body polluted with filth. These are characteristics calculated to made the beholder shudder with horror.

THE GOLDEN EAGLE is a bird of very considerable size, measuring in length about three feet, and between the extremities



Golden Eagle.

of its extended wings seven feet and a half. How noble must be the appearance of this imperial bird, when flying in its stately

majesty through the sky, and looking down with apparent disdain on all sublunary things. It weighs from twelve to fourteen pounds: the bill is deep blue, and the cere yellow: the prevailing color in the head and neck is a dark brown, bordered with tawny; and the hind part of the head is of a bright rust color: the legs are yellow and feathered to the toes; these are protected by scales: the claws are remarkably large, showing how formidable this bird must be to its prey; the middle claw is two inches in length.

The Golden Eagle is a native of Europe, and has even been found in some of the more wild and mountainous parts of Great Britain. The golden eagles choose for the place of their abode, where they build their nests, elevated rocks, ruinous and solitary castles and towers, and other retired situations, secure from the annoyance and the visits of men. The nest differs from the generality of the nests of other birds: they are not hollow, but flat. Male and female unite their efforts in rearing their domestic abode, and generally place it between two rocks, in a situation both dry and inaccessible.

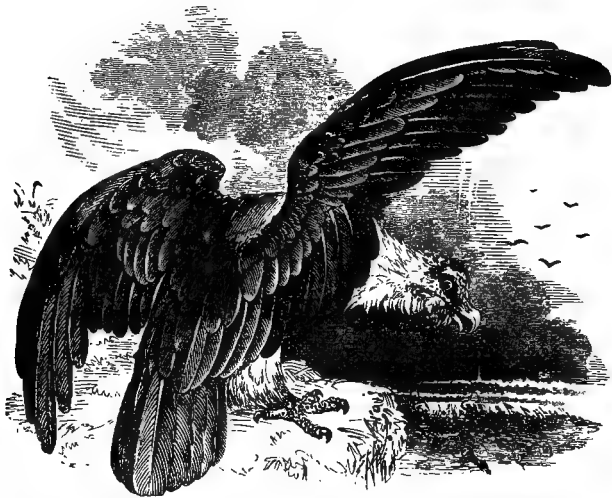
It is said that the nest of the Golden Eagle lasts him during all his lengthened life; and we all know that the length of the life of the Eagle is proverbial. In form the nest resembles a floor; the basis consists of sticks about five or six feet in length, which are supported at each end, and these are covered with layers of rushes and heath.

The golden eagles are exceedingly muscular; but their strength appears most conspicuous in their beak, their talons, and their wings. There is scarcely any quadruped able to stand before them. They have been known to strike a man dead with one flap of their wings. They live to a great age; one that died at Vienna had been in confinement above a century. They have also this peculiarity, of bearing abstinence from food for a period of time which would destroy the life of the greatest number of animals.

THE BEARDED EAGLE.—The *Falco Barbatus*, or *Bearded Eagle*, has a beak of a purplish flesh color, and hooked only at the point. The head and neck are covered with feathers. It is called

the *Bearded Eagle*, because there is suspended beneath the throat a kind of beard composed of very narrow feathers, like hairs. The legs are covered with feathers even to the toes, which are yellow; the claws are black; above, the body is blackish brown; and beneath, the parts are white, with a tinge of brown.

The bearded eagles are inhabitants of the highest, the most formidable and awfully sublime parts of the great chain of snow-



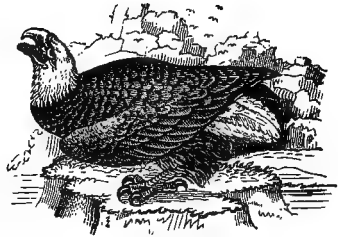
Bearded Eagle.

and Alps that separates Switzerland from Italy. Sometimes they are found of a size truly wonderful: one caught in the Canton of Glarus measured, from the tip of its beak to the extremity of its tail, nearly seven feet, and from the extremities of its extended wings eight feet and a half. Even some have been shot much larger. This furnishes some idea of the remarkable duration of their life. Their nests are usually placed in the clefts of rocks, in situations too lofty and inaccessible ever to be reached by man. The food of these formidable and magnificent birds consists of the chamois, white hares, marmots, kids, and more particularly lambs.

Because of their devouring the latter, the Swiss peasants call them by the name of *lammer-gyer*, or lamb-vultures. Mr. Bruce, the traveller, met with an eagle of this species not far from Gondar, the capital of Abyssinia. He considers it the largest bird in creation.

THE BALD or WHITE-HEADED EAGLE is found in various parts of North America, and was formerly very common in the vicinity of Niagara Falls. These birds breed all the year round.

When the eaglets are just covered with down, and a sort of white woolly feathers, the female eagle lays again. These eggs are left to be hatched by the warmth of the young ones that continue in the nest, so that the flight of one brood makes room for the next that are but just hatched. These birds fly very heavily, so that



Bald Eagle.

they cannot overtake their prey, like others of the same denomination. To remedy this, they often attend a sort of fishing-hawk, which they pursue, and strip the plunderer of its prey. This is the more remarkable, as this hawk flies swifter than they. These eagles also generally attend upon fowlers in the winter, and when any birds are wounded, they are sure to be seized by the eagle, though they may fly from the fowler. This bird will often steal young pigs, and carry them alive to the nest, which is composed of twigs, sticks, and rubbish; it is large enough to fill the body of a cart, and is commonly full of bones half eaten, and putrid flesh, the stench of which is intolerable.

THE BLACK EAGLE is distinguished from the others by having the feathers of the head and upper part of the neck mixed with red; the tail feathers at the lower part of a blackish color, and above, white, speckled with black. The leg feathers are of a dirty white. It is found along the American Coast from Florida to Brazil.



The Black Eagle.

THE SEA EAGLE, distributed over North America, from the fur regions to Florida, feeds on fish, and is a powerful bird. The color of its plumage inclines to white on the back, mixed with iron brown; the belly is white, interspersed with iron-colored spots; the covert feathers of the tail are whitish, and the tail feathers black at the extremity.

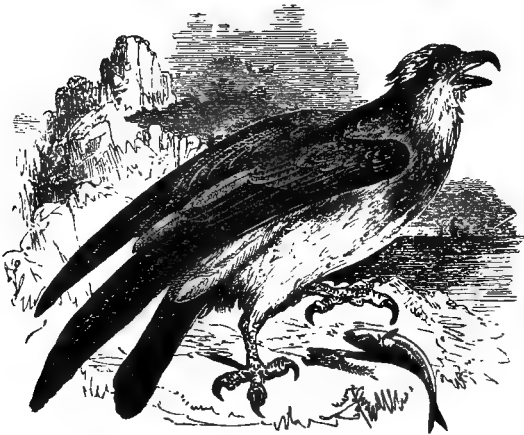
THE OSPREY, or *Fishing Hawk*, is spread over the whole of Europe, part of Asia, and some portions of North America. As its name imports, its food consists entirely of fish, which it obtains by dashing into the water, and seizing them with its curved talons. The Osprey, although it takes the fish, is not the only bird that has a predilection for that diet, as the bald-headed eagle frequently waits until the osprey has seized the prey, and then deprives him of it.



The Sea Eagle.

It resides near water, especially large rivers and lakes; and it feeds principally on fish, which it catches with much greater eagerness than the keen and patient angler. It pounces on its prey with astonishing rapidity, sometimes actually plunging two feet under the surface of the water, when it successfully seizes and carries off its prey to some distance, where it feasts at leisure with greater delight than the most skilful epicure. In the hatching season, it is frequently seen about the lakes of Killarney, in Ireland. It is to be met with in most of the countries of Europe, even from Sweden to Greece. Travellers have seen it in Egypt, Nigritia, Barbary, and Louisiana. In the spring and summer months it is often seen hovering in solemn majesty over the large American rivers for several minutes at one time, resting on the wing as motionless, when it darts down in a moment, dives into

the water below, and seldom fails of securing a fish in its talons. It is very striking to see it, immediately after, shaking off the



The Osprey.

water from its feathers, which rises up like a cloud of mist, and then the bird shapes its course to the neighboring woods.

THE SECRETARY BIRD derives its name from the tufts of feathers at the back of its head, which bear a fanciful resemblance to pens stuck behind the ear. This extraordinary bird, whose true position in ornithology has been such a stumbling-block to naturalists, inhabits South Africa, Senegambia, and the Philippine Islands. Probably a different species inhabits each of these countries. It feeds on snakes and other reptiles, of which it consumes an amazing number, and is on that account protected. When battling with a snake, it covers itself with one wing as with a shield, and with the other strikes at the reptile until it falls senseless, when a powerful blow from the beak splits open the snake's head, and the victim is speedily swallowed.

THE COMMON BUZZARD is varied with brown and ferruginous color above, and with white and ferruginous beneath; the cere and legs are yellow, and the tail banded with brown. The

female is generally of darker hues than the male. The weight is about thirty ounces, and measures about twenty-one inches in length, and four feet one inch in extent of wing. The appearance of the Buzzard is exceedingly drowsy and sluggish, on account of its large head, thick body, clumsy legs, and large lifeless eyes. It is too heavy and indolent to hunt by flight, and therefore is compelled to adopt another method for obtaining its subsistence. For hours together it will continue motionless on a tree, bush, stone, or even clod of earth, till some game passes within the reach of its spring, when it will dash upon it in a moment, and then devour



The Common Buzzard.

.t. Its ordinary fare consists of small birds, rabbits; hares, moles, field-mice, lizards, frogs, toads, etc. When the buzzards have their young, they overcome to a great degree their sluggish habits: they become more active, and will soar to a considerable height, ascending in a spiral direction.

The female usually makes her nest in the fork of a tree with

large sticks, and lines it with wool, hair, or other soft substances, and sometimes takes possession of a deserted crow's nest, which it enlarges, and makes it fit for accommodating her future family of young buzzards. She deposits two or three eggs; the number seldom amounts to four: they exceed the eggs of a hen a little in size; the color is a dirty white, a little greenish, and most commonly spotted with rust-color, chiefly at the larger end. The young, when in the nest, are covered with a yellowish down. In the middle of July they begin to perch upon bushes, when they utter a cry shrill and plaintive. They accompany the old birds some time after quitting the nest. This is very uncommon with birds of prey, which at a very early period show that parental affection is extinct in their bosom, and drive off their offspring from them with apparent disgust as soon as they are fledged and able to provide for themselves.

THE HONEY BUZZARD is found in the warmer parts of Europe, and in Asia, seldom visiting our shores. Its food does not consist of honey, as its name might seem to indicate, but of bees, wasps, and their larvæ. In the stomach of one that was shot in Scotland, a great number of bees and grubs were found, but no honey or wax. It does not, however, refuse small quadrupeds, or sometimes small birds, if pressed by hunger. It is a bird of passage, leaving Europe at the commencement of winter. Its nest is built in high trees, and its eggs are two or three in number, grey, spotted with red at one end, and surrounded with a red band. Its length is about two feet, and the expanse of its wings fifty-two inches. The third primary feather is the longest.

THE KITE is a native of almost all the countries of Europe, and is found in Siberia, Africa, and in some latitudes of America. Many of those which breed in Europe retire into Egypt and other hot latitudes, during the cold season. They are partial to hilly and woody situations. The nest is built by the female early in the spring: she places it in a fork of a large tree, forming it of sticks, and lining it with soft materials, such as wool, hair, the inner bark of some tree, or bits of cloth. The appearance of the Kite in the sky is singularly elegant, sailing

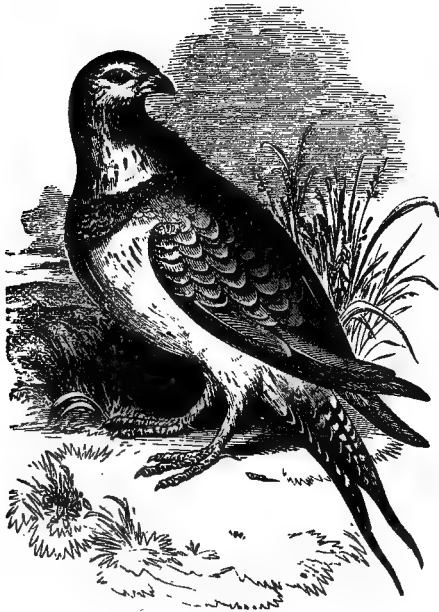
along in its circling flight, and maintaining its equipoise by the slightest movement of its pinions. From its airy height, it suddenly darts down upon the object of its prey, such as rabbits, hares, game of all kinds, poultry, and birds which cannot fly.



The Kite.

THE SWALLOW-TAILED FALCON is an inhabitant of North America, but has been more than once taken in England. It feeds on the wing, like the swallows, pursuing the large moths and other insects with an ease and rapidity for which its formation eminently fits it. These insects are, however, not the only food of this bird. Audubon mentions that "their principal food is large grasshoppers, grass caterpillars, small snakes, lizards, and frogs. They sweep close over the fields, sometimes stooping to secure a snake, and holding it fast by the neck, carry it off, and devour it in the air." Its nest is built on the summit of an aged pine or oak, and its eggs are from four to six in number, of a greenish white color, irregularly spotted with brown at the large end. The length of this bird is two feet.

THE PERIGRINE, or *Common Falcon*, is brown above, with



The Swallow-tailed Falcon.

rufous undulations; the tail marked with dusky bars; breast and belly whitish, with dusky spots. The male is in length a foot and two inches, and that of the female a foot and four inches, and the expanse of the wings three feet and a half. This bird of prey has much elegance of form, and a considerable share of outward beauty; all this covering a bloodthirsty, rapacious nature. In this it may be considered a figurative emblem of too many of the human race, who, under an agreeable exterior, cherish the vilest passions and the most hateful vices.



Common Falcon.

. The Falcon is found a native of the different regions of Europe, from the snow-clad mountains of Iceland to the fragrant

islands of the Mediterranean Sea. It frequents high and rocky eminences, and about the end of February builds its nest in bold, precipitous cliffs. There is hardly a part of the British coasts, where the cliffs rise to the height of three or four hundred feet, in which falcons are not found scattered in the breeding season, and from which they seldom retire, except as occasional migrants.

THE GYR-FALCON is extremely rare in England, those intended for hawking being principally brought from Iceland. On the rocky coasts of Norway and Iceland its eggs are laid. These birds are very courageous in defending their young. A pair of them attacked Dr. Richardson while he was climbing near their nest, flying in circles round him, and occasionally dashing at his face with loud screams. The entire length of the Gyr-Falcon is twenty-three inches.



The Gyr-Falcon.

THE MERLIN, the least of the English Falcons, was considered in olden times as the lady's bird, every rank being obliged to content itself with the bird allotted to its peculiar station, royalty alone having the privilege to bear an eagle into the field.

The spirited little Merlin seizes with great dexterity small birds, such as buntings, thrushes, and blackbirds, itself really hardly larger than its prey, its entire length being barely eleven inches. Even the partridge falls before a trained bird. Its eggs are four in number, of a reddish mottled brown, laid in a rude nest among the heather.



The Kestrel.

THE KESTREL, or *Windhover*, as it is often called, frequently falls a victim to the mistaken zeal of the British farmer, who takes every opportunity of destroying it, as he confounds it with the sparrow-hawk. The natural food of the Kestrel is field-mice, so that the farmer should protect

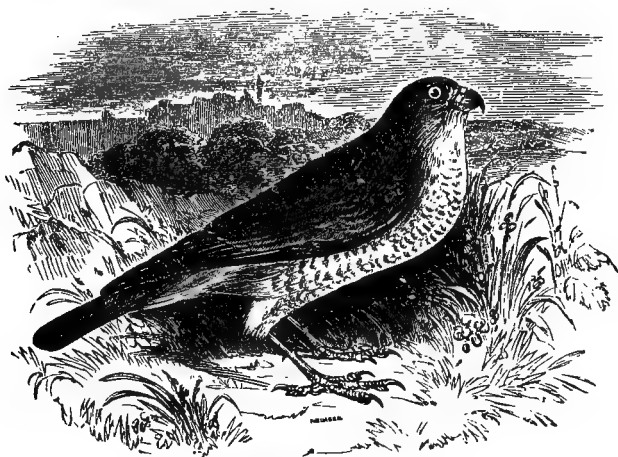
instead of remorselessly murdering his benefactor. These birds are not uncommon. Many live close to Oxford, and especially in Bagley Wood, where they may be seen almost daily. They also live in great numbers among the precipices in Dovedale. Their nest is usually built in the deserted mansion of a crow or magpie. The eggs are four in number, of a dark reddish brown. The length is from thirteen to fifteen inches.

THE GOSHAWK is found plentifully in most of the wooded districts of Europe, but is comparatively rare in the British Isles. It seldom breeds south of Scotland, but its nest is not unfrequently found in that country, built upon lofty trees, principally firs, and containing three eggs of a bluish white color with reddish brown marks. When in pursuit of prey, it strikes its victim to the ground by the force with which it dashes through the air. Should the terrified quarry hide itself, the Goshawk takes up its station on some elevated spot, and there patiently waits until the game takes wing. Its principal food consists of hares, squirrels, pheasants, and other large birds, which its great strength enables it to destroy. Its length is about two feet; the fourth primary feather is the longest.

THE COMMON HAWK, or *falco-communis*, is brown above, with rufous, or reddish undulations; the tail is marked with dusky bars; the breast and belly whitish, with dusky spots. It is an inhabitant of the colder and temperate parts of Europe, from Iceland to the Mediterranean. About the end of February they build their nests in lofty precipitous rocks having a southern aspect. The rock on which the castle of Dumbarton stands, has been long mentioned as a place famous for the breed of the Common Hawk. The growth of the young is peculiarly rapid. In three months they are equal to their parents in size. The eggs are generally three or four, and white, spotted with brown.

Hawks are very courageous birds. They dart suddenly, perpendicularly, and with great rapidity upon their prey. This chiefly consists of partridges, pheasants, quails, wood-pigeons, etc., and the smaller quadrupeds. They also attack the kite, and

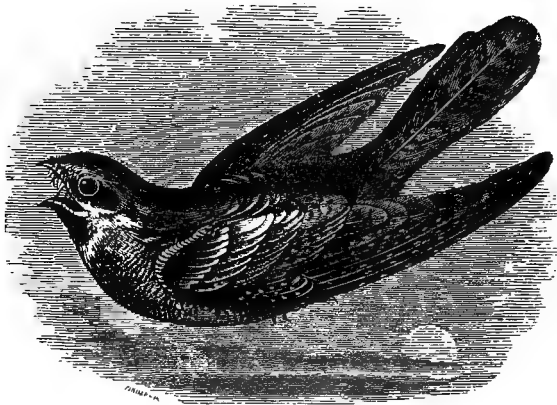
oblige it to relinquish its victim, but spare its life, as if in contempt of an adversary so inferior to itself.



The Common Hawk.

THE NIGHT-HAWK.—By some naturalists this bird is considered as the *strix orientalis*. Hasselquist thus describes it: “It is of the size of the common owl, and lodges in the large buildings, or ruins of Egypt and Syria, and even in dwelling-houses. The Arabs settled in Egypt call it *masasa*, and the Syrians, *banu*. It is extremely voracious in Syria; to such a degree, that if care is not taken to shut the windows at the coming on of night, it enters the house and kills the children. The women, therefore, are very much afraid of it.” This voracious bird and nightly robber was pronounced unclean, and forbidden to be eaten by the law of Moses.

THE SPARROW-HAWK is common throughout Europe. It displays great pertinacity in pursuit of its prey, which it will chase for a long while, skimming along a few feet above the ground. One of these hawks was known to dash through a window in pursuit of a small bird. When taken young it is easily

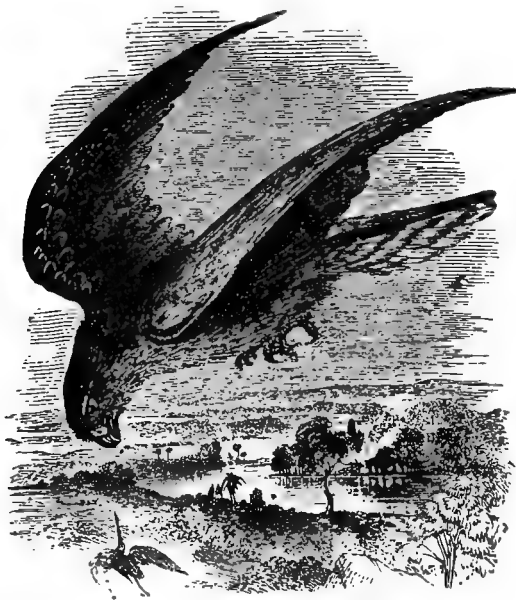


The Night-Hawk.

tamed, and will then associate with the most incongruous companions. A gentleman had a young Sparrow-Hawk which used to live in his dovecote among his pigeons, would accompany them in their flights, and was uneasy if separated from its strange friends. Although a brave little bird in its wild state, it sometimes becomes sadly degenerate when domesticated.

THE HAWK LANNARIUS.—*Lannarius*, in ornithology, is a bird of the long-winged hawk kind. In English it is called the *lanner*, and the male the *lanneret*. Its beak and legs are blue; its head and neck are variegated with large streaks of black and white; its back, wings, and tail are not variegated, unless with a few small white spots; and its wings, when extended, are speckled underneath with small round white spots; its neck and legs are very short. This species is very common in France, remains the whole year without migrating like other hawks; is very docile, and is trained up for all the purposes of the ancient and animating amusement of falconry. The same species is found in the southern climate of Italy, but differs in the following respects: it has much of a yellowish brown about the shoulders, and is so indocile, that it is of no use in sporting. It is also found in Ireland, and is thus

described by Mr. Pennant: "It is less than the buzzard; the ear is of a pale greenish yellow; above each eye, to the hind part of the head, passes a broad white line, and beneath each, a black mark pointing downward; the throat white; the breast tinged



The Hawk Lannarius.

with dull yellow, and marked with brown spots pointing downward; the thighs spotted in the same manner; the quill-feathers dusky; and the tail spotted like the wings."

II.—NOCTURNAL BIRDS OF PREY.

Under the sub-order owl, there are no less than twenty-six species, or varieties. Owls are nocturnal birds of prey; their head is large in proportion to the rest of their body; their eyes, too, are large and prominent; their skull is thick, light, with numerous cavities; their outer toe may be directed forward or back-

ward at pleasure; and from the softness of their feathers, they make little or no noise during their flight: their eyes are so constructed, that they can see more clearly in the dusk of the evening than in the bright glare of day; they have the power of shutting out or admitting the light, by the contraction or dilation of the pupil of the eye. It is a singular fact, that though none of the nocturnal birds of prey are materially injurious to man, yet almost in every country and age they have been looked upon by the vulgar and superstitious as creatures of evil omen, and as the heralds of death!

The principal characters of the Owl are the following: they are bill-hooked; nostrils oblong, covered with recumbent, setaceous, that is, strong and bristly feathers; head, eyes, and ears large; the tongue bifid, or divided into two, and the outer toe movable backwards or forwards.

There is evidently an adaptation of body in birds of night by which they are fitted for their nocturnal pursuits. This proves that their habits are not the result of caprice, or accident, or even instinct uninfluenced by natural causes. The formation of the owl is not suited to the full light of day; it is so formed, that it can only live in partial darkness. It cannot properly exercise its sight, except in the dusk of the evening or the grey of the morning. On account of the unusual largeness of the disk of the pupil of the eye, the brightness of the noonday sun would dazzle and blind it by an overwhelming entrance of light. But what renders it unfit for vision by day qualifies it for seeing objects by night. From the uncommon largeness of the pupil of its eye, the rays of light, which are more widely diffused, that is, fewer in number and more apart, are admitted in greater quantities into the eyes of owls than into those of other birds whose eyes are differently formed. The owl makes very little noise in its flight, not even so much as would awake those birds which are the objects of its plunder.

THE GREAT-EARED OWL, or *Eagle Owl*, is the largest of the family. This powerful bird, not satisfied with the "rats and mice and such small deer," which content the English owls, boldly

attacks young fawns, hares, and rabbits, together with small birds. It inhabits the north of Europe, but has been several times observed in Great Britain. It lays its eggs in the clefts of rocks or in ruined buildings. The length of this bird is upwards of two feet.



The Eagle Owl.

THE HAWK or CANADA OWL inhabits the Arctic portions of Asia and America. Its head is not so round, nor is its face so broad, as those of the other owls, from which it is also distinguished by its habit of hunting by day. In face it bears some resemblance to the harriers. It builds in trees, and lays two eggs — white, as are those of all owls. The eggs of owls are easily distinguished from other white eggs by a peculiar roughness of surface, which cannot be mistaken. The length of the Hawk Owl is from fifteen to eighteen inches.

THE SNOWY OWL is properly an inhabitant of the north of Europe, but has more than once been discovered in Great Britain

It is also found in North America. Wilson relates that it is a good fisher, snatching its prey from the water by a sudden grasp of the foot. It also preys on lemmings, hares, ptarmigans, etc., chasing and striking at them with its feet. It makes its nest on the ground, and lays three or four white eggs, of which more than two are seldom hatched. Its length is from twenty-two to twenty-seven inches, the expanse of wing four feet; the third primary feather is the longest.

THE BURROWING OWL accompanies the prairie dog of North America, and wherever that animal chooses to live, there is the Burrowing Owl. This singular little bird finds that to take possession of the ready-made burrows of the prairie dog is much more agreeable than to dig a hole for itself; so it takes unfurnished lodgings in a deserted dwelling, undisturbed by anything except a casual lizard or rattlesnake.

So numerous are these little owls, that they may be seen in small flocks seated on the tops of the mounds in which the entrance of the burrows is formed. It is said that the owls, marmots (or prairie dogs), lizards, and snakes, all live harmoniously in one happy family. Such, however, is not really the case, as the burrowing owls prefer holes unoccupied by any other tenant, and have been seen with something most suspiciously like a young snake struggling in their mouths. The bottom of its hole is generally comfortably filled with dried hay and roots.

The legs of this bird are longer than those of other owls. It is by no means large, measuring but ten inches in length.

THE BARN OWL affords another instance of mistaken persecution. This beautiful and most useful bird, whose carcass we so often see triumphantly nailed to the barn, actually feeds upon and destroys in incalculable numbers the rats and mice which bear it company in its undeserved punishment. Waterton remarks: "When farmers complain that the barn owl destroys the eggs of their pigeons, they lay the saddle on the wrong horse. They ought to put it on the rat. Formerly I could get very few young pigeons till the rats were excluded from the dovecote. Since that took place, it has produced a great abundance every year, although the

barn owls frequent it, and are encouraged all around it. The barr owl merely resorts to it for repose and concealment. If it were really an enemy to the dovecote, we should see the pigeons in commotion as soon as it begins its evening flight, but the pigeons heed it not, whereas if the sparrow-hawk or hobby should make its appearance, the whole community would be up at once. . . . I am amply repaid for the pains I have taken to protect and encourage the barn owl; it pays me an hundred fold by the enormous quantity of mice which it destroys throughout the year."

It also devours great numbers of beetles and other insects. It is possible that it may, also, destroy young birds, but not probable, as feathers and birds' bones are never found among the rejectamenta. It will, however, when domesticated, devour a dead sparrow or linnet when presented to it.

Few people know what a little bird this owl really is. The



Egyptian Owl.

thick loose plumage is so deceptive, that no one unacquainted with the structure of the bird would imagine that it is hardly so large as a pigeon. The head, too, when deprived of its feathery covering, completely loses its previous aspect, being long and narrow, like that of a hawk. In fact, few creatures look more contemptible than an owl stripped of its feathers.

THE SHORT-CRESTED OWL is also called the *Egyptian Owl*, because it prevails in Egypt as well as in other parts of Africa. It is one-fourth longer than the common species, and like it, yellow, dotted with brown, and vermiculated, that is, adorned with a variety of beautiful colors on the back. The belly is striped across with narrow lines, and the crests very short. This bird is not only met with in Egypt, but also in Asia Minor and in Persia. Pennant, who is a great authority, tells us, that it is found in all the central countries of Europe, and also in Scotland. It feeds on moles, rats, mice, bats, on small birds, and insects.

CHAPTER X.

DIVISION I.—VERTEBRATES.

CLASS II.—BIRDS.

ORDER II.—PERCHING BIRDS.

THE most numerous and varied of all the families of Birds is the *Insessores* or *Perching Birds*, which comprises all those having their habitations in trees, excepting only the climbers and birds of prey. Their feet are fitted for perching on branches, having three toes in front and one behind, on the same level with the others; each toe being armed with long and partially curved claws. This order is divided into Cone-billed, Tooth-billed, Slender-billed, and Gaping-billed birds.

THE CONE-BILLED PERCHERS.

THE JAY, so well known for the beautiful blue markings on its wings, is rather a shy bird, preferring to reside in the thickest woods, and seldom coming into the open country. It is easily tamed when young, and is very amusing when domesticated.

This bird possesses, like several others of the same family, considerable talents for mimicry. It has been known to imitate the sound of a saw, the bleat of a lamb, or even the neighing of a horse, with the most perfect accuracy. Nor do its powers cease here, for although its natural voice is harsh and grating, yet it can imitate the sweet notes of singing birds, such as the greenfinch, with wonderful fidelity. It has also frequently been taught to articulate words.

The Jay feeds on vegetable productions, such as acorns, etc., more than the true crows. It is also partial to fruits, especially ripe cherries, and is consequently persecuted by the gardener. It is also said to devour eggs and young birds. Its nest is built

about twenty feet from the ground, the upper part of a thick bush being preferred. The eggs are five or six in number, of a yellowish white, thickly speckled with brown. The length of the bird is nearly fourteen inches.

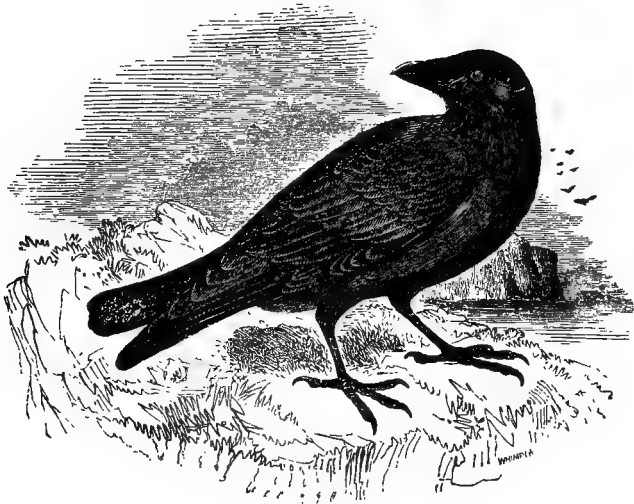
THE MAGPIE, which seems to rival the parrot in the proud title of the monkey of the birds (the raven being the ornithological baboon), is a well-known inhabitant of England "Its thieving and hiding propensities," says Mr. Wood, "have been frequently told; but I must still venture to give a few anecdotes or a tame magpie that resided in Wiltshire. This bird found a malicious enjoyment in pecking the unprotected ankles of little boys not yet arrived at manly habiliments, and was such a terror to the female servants that they were forced to pass his lurking-place armed with a broom. One of the servants having neglected this precaution, was actually found sitting down on the stones to protect her ankles, the magpie triumphantly pacing round her, until aid was brought, and the bird driven away. But to little boys and girls the magpie showed no mercy, springing out of its hiding-place and chasing them completely along the garden walk."

George Le Roy states that a magpie having stolen some game, it was resolved to shoot it. A man hid himself in a hut near its nest for this purpose. The bird flew away when he entered, nor would return. The next day two men entered and one came out. Mag was not to be cheated; she waited till the second left also. Three went in and two came out, with the same result. Four then entered, and three came away. The bird went back and was shot. So magpies, says George Le Roy, can count three but not four.

The nest of the Magpie is built on a high tree, and curiously defended with thorns, having only a small hole just large enough to admit the owners, so that the liberal use of a pocket knife is frequently requisite in order to obtain the eggs. The nest is covered with a dome of thorns.

THE RAVEN is found on the continent of America, and in most parts of Europe and Asia. It lives principally on carrion of various kinds, such as dead sheep or lambs, whose death the

Raven is accused with some justice of hastening, and on fishes or cetaceous animals which have been cast on shore by the waves. In these cases the Raven conducts itself much in the manner of the vulture. It commences by taking out the eye and tongue, and then proceeds to tear open the abdomen, operations for which its sharp and powerful bill seems quite as well fitted as the hooked beak of the rapacious birds. It is a very crafty bird, and can with difficulty be approached, but by laying a dead carcase near



The Raven.

its haunts, and being carefully concealed, it may be seen cautiously approaching; first perching on an eminence, it looks carefully round; then, advancing with a sidelong step, it examines its expected prey. When fully satisfied, it pecks out the eyes and proceeds to satiate itself with food. The Raven seems to fear no storms, and to be deterred by no inclemency of weather from seeking its prey. Although formerly so plentiful in England that innumerable omens were drawn from its roaking, flight, etc., it

has almost become extinct, much to the discomfiture of omen-seekers. No incantation and no dance of witches seemed to be considered complete, without a black cat, a toad or two, a bat, and a raven. Certainly the extraordinary gravity which marks the demeanor of the Raven has something almost preternatural in it. The manner in which he sets about a piece of mischief, as if he considered it a moral duty, is most absurd, and the pertinacity with which he prosecutes a great work, such as the feat of Charles Dickens's raven, who "new pointed the greater part of the garden wall, by digging out the mortar, and tore up and swallowed in splinters the greater part of a wooden staircase of six steps and a landing," is perfectly astounding.

Of this bird, Mr. Wood says: "A raven in our possession used to watch the gardener taking particular pains to prop up and secure a valuable plant. His labor was always in vain, for the raven, with a sidelong step and an unconcerned air, as if he were thinking of anything but the plant, would sidle by it, when one wrench of his iron bill laid the unfortunate plant on the earth, and the raven moved off with a most provoking air of innocence. The lady to whom the garden belonged was quite afraid of the bird, and declared that she almost believed that it was possessed by some evil spirit. It used to walk behind her, so that she could never see it; for when she turned round, the raven hopped round too, and kept himself completely out of her sight. At last it became so very mischievous that it was sent away, much to my regret.

"Not long ago, I was visiting a small collection of living birds, among which was a raven, whose wings were clipped, and who was permitted to have the free range of the yard. He gained considerable benefit from his freedom, for he could steal the provisions of the other birds, unless they were very quick. When I went to his residence, I took the back of a letter, and was reading the address, when I saw the raven watching my proceedings with great curiosity. The paper was of no consequence, so I let it fall, and walked on as if it had been an accident. The raven waited until I had left the paper some few paces behind, when he took a sidelong kind of a walk towards it, tore it into scraps, and ran

away with the largest piece under a water-butt, where he kept watch over it."

It has a great capacity for imitating sounds, and can be taught to pronounce whole sentences, or sing songs with wonderful accuracy.

THE ROOK inhabits almost every part of Europe, and is very common in England, where it lives in a kind of semi-domestication, usually inhabiting a grove of trees near a house, or in a park, where it is protected by the owner, although he makes it pay for this accommodation by shooting the young once every year. Apparently in consequence of this annual persecution, the Rook has an intense horror of guns, perceiving them at a great distance. While feeding in flocks in the fields, or following the ploughman in his course, and devouring the worms and grubs turned up by the share, the Rook has always a sentinel planted in a neighboring tree, who instantly gives the alarm at the sight of a gun, or of a suspicious-looking object.

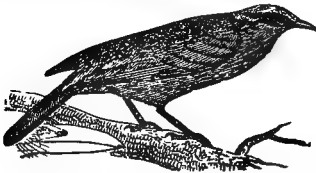
The good which the Rook does by devouring the grubs of the cockchaffer, and the tipulas or daddy-long-legs, both of which are exceedingly injurious to the crops, more than compensates for the damage it sometimes causes, by pulling up young corn, or newly-set potato cuttings; in the latter case more, I believe, to get at the wireworms, which crowd to the slices of potato, than to eat the vegetable itself. In the fruit season, the Rook, like most other birds, likes to have his share of the cherries, pears, and walnuts but may be easily kept away by the occasional sight of a gun.

Round the base of the Rook's beak is a whitish looking skin, denuded of feathers, the reason or cause of which is not very obvious. The eggs of this bird are five in number, similar to those of the raven in color, but much smaller. The length of the bird is nineteen inches.

. THE JACKDAW is another well-known bird. It does not build in the branches of trees like the rook, to which it is very similar in many respects, but prefers holes in decayed trees or old buildings, particularly frequenting church towers and steeples. The Jackdaw feeds upon almost any substance that it can find.

It kills mice with a single blow of its beak, and then devours them piecemeal. Grasshoppers, beetles, etc., are also killed by a squeeze across the thorax, and the head, wings, and legs are twisted off before the bird begins to eat them. It treats bees, wasps, and other stinged insects, with much more caution. The feathers upon the crown of its head are of a greyish white color, a peculiarity instantly distinguishing it from the rook. It is frequently kept tame, and is very amusing in captivity.

THE CROW, or *Carrion Crow*, as it is erroneously called, seldom feeds on carrion, for poor indeed would be his meals were he dependent on dead sheep or horses for a livelihood. Possibly the name was given as a distinction between it and the rook. Waterton states that the flesh of the Carrion Crow is just as good



Crow.

as that of the rook, and relates how he once served up a pie of these birds to some friends, who thought them pigeons. It will also eat cherries and walnuts like the rook, and when the supply of insects has failed, it will then turn its

attention to the duck-pond and farm-yard, and carry off a young duckling or chicken. Sometimes he approaches the farm-house by stealth, in the search of young chickens, which he is in the habit of snatching off, when he can elude the vigilance of the mother hen, who often proves too formidable for him. It also carries off eggs, by pouncing upon them, and driving its bill through the shell. It will be seen, from the following anecdote, that mice and rats are not unaccustomed food.

“In a field near a gentleman’s house, about a mile from Caernarvon, in Wales, there are some out-buildings much infested with rats. Four or five traps are set on the premises every night, and it is the business of a servant-man to go to the spot between five and six in the morning. He is always punctually met by a company of crows, that station themselves at a little distance, and most narrowly watch all his proceedings. No sooner does he

remove his captives from the traps and throw them into the field, than the carnival begins. The crows seize upon their booty, scientifically perforate the integuments, and scoop out and devour every particle of flesh, even in the head. In a very short time the skins are turned inside out, and a few clean picked bones are the only memorials of the banquet."

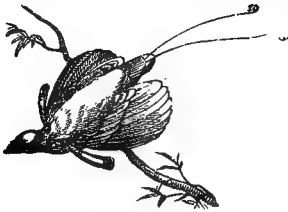
The nests of this bird are placed on the summit of some tall tree, and contain about five eggs, closely resembling those of the rook. The length of the bird is eighteen inches.

THE HOODED CROW, otherwise called the Royston Crow or the Grey Crow, is one of the winter visitors to Great Britain, generally leaving there about April, although it sometimes remains during the summer, and brings up a brood of young. Like most of its congeners, it builds its nest on the tops of very tall trees, such as the pine, but is also known to build on precipitous rocks. It is said to use these rocks in the stead of an oyster-knife, for as it is very fond of oysters, and does not possess a knife to open them with, it must discover some other method of getting at the enclosed animal. To attain this purpose, it is said to seize the oyster in its beak, soar up to a great height in the air, and then let it drop from that elevation upon the hard rock, when the shell is dashed to pieces, and the Crow is enabled to pick out the animal with ease.

There is but little of the usual corvine black hue about this bird, only the head, throat, wings, and tail being so decorated; the remainder of the bird being of an ashy grey. The length of the bird is about twenty-two inches.

THE CHOUGH is rather larger than the jackdaw, and is principally distinguished by the red hue of its bill and legs. It inhabits the counties of the western coast of England, and is, perhaps, more common in Cornwall than in any other county. When tame, it shows a very inquisitive disposition, examining every novelty with the greatest attention. It builds its nest in the cavities of high cliffs, and lays four or five eggs of a yellowish white color, spotted with light brown. The length of the bird is seventeen inches.

EMERALD BIRD OF PARADISE.—This most gorgeous and elegant bird was once the subject of much discussion between naturalists. The natives of New Guinea were accustomed to dry



Emerald Bird of Paradise.

them, having first cut off their legs, and then to offer them for sale. In this footless state they reached Europe, where it was immediately stated that the bird lived always in the air, buoyed up by the lightness of its feathery covering; that the shoulders were used as its nest; that the only rest it took was by suspending itself from a branch by the filamentary feathers of the tail; that its food was the morning dew; together with many other conjectures not less ingenious than amusing.

This bird appears about the size of a jay. Its body, breast, and lower parts are of a deep rich brown; the front set close with black feathers shot with green; the throat is of a rich golden



Six-shafted Bird of Paradise

green; the head yellow; the sides of the tail are clothed with a splendid plume of long downy feathers of a soft yellow color. By these are placed two long filamentous shafts, which extend nearly two feet in length.

Of these beautiful fea-

thers the bird is so proud that it will not suffer the least speck of dirt to remain upon them, and it is constantly examining its plumage to see that there are no spots on it. When in its wild state it always flies and sits with its face to the wind, lest its elegant filmy plumes should be disarranged.

So far from living exclusively on dew, it eats no small amount of insects, such as grasshoppers, which it will not touch

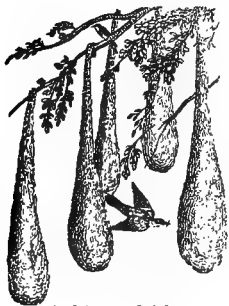
if dead, and commences its repast by stripping off the legs and wings. When in confinement, it also eats boiled rice, plantains, etc., but in the wild state it seems to feed mostly on the seeds of the teak-tree, and a kind of fig.

THE SATIN BOWER-BIRD.—It is a singular thing to find a bird building a kind of playground, without reference to its nest, but merely for amusement. The Bower-Bird has this curious habit. It builds a kind of bower of thin twigs, interwoven so as to meet above, forming a kind of tunnel. The entrance of this bower is decorated with any brilliant article that the bird can find, such as shells, bones, and feathers of several parrots; some feathers being stuck in among the twigs, and others strewn at the entrance.

Mr. Gould, who first brought this curious bird before the public, says: "The propensity of these birds to pick up and fly off with any attractive object, is so well known to the natives (of Australia), that they always search the runs for any small missing article, as the bowl of a pipe, etc., that may have been accidentally dropped in the brush. I, myself, found at the entrance of one of these a small neatly worked stone tomahawk, of an inch and a half in length, together with some slips of blue cotton rags, which the birds had doubtless picked up at a deserted encampment of the natives. For what purpose these curious bowers are made, is not yet, perhaps, fully understood: they are certainly not used as a nest, but as a place of resort for many individuals of both sexes, which, when there assembled, run through and around the bower in a sportive and playful manner, and that so frequently, that it is seldom entirely deserted."

THE STARLINGS comprise many genera, among which the Pensile Oriole of America, commonly known as the Baltimore Oriole, is the most interesting. These birds build, or rather weave, a fabric not unlike loose cloth, composed of hemp or flax. This nest is of the singular form represented in the engraving, and the entrance is at the side. In all probability this singular formation is for the purpose of keeping out the black snake, who is constantly on the lookout for young birds. The parent orioles often attack the snake, and compel him to retreat.

The plumage of the male when full grown is very brilliant. The head, throat, and back are black, the under parts are orange, the breast vermilion. A band of orange passes over the shoulders, and the tail is orange and black. The length of the bird is almost eight inches. This is not the only bird that constructs pensile nests; the weaver birds also form these nests, but of a different form. They look like great pistols hung up by the butt, the entrance being at the muzzle, and the nest in the butt.



Baltimore Oriole.

29. THE COMMON STARLING is a bird well known both for its beauty and the singular method of flight. When a flock of Starlings begin to settle for the night, they wheel round the place selected with great accuracy. Suddenly, as if by word of command, the whole flock turn their sides to the spectator, and with a great whirring of wings, the whole front and shape of the flock is altered. No body of soldiers could be better wheeled or countermarched than are these flocks of starlings, except, perhaps, an unfortunate few, who are usually thrown out at each change, and whom we must charitably suppose to be recruits.



Common Starling.

30. The Starling lives principally among old buildings, and is very fond of gaining admittance into dovecotes, where it is a harmless visitor, and may be suffered to remain without detriment to the pigeons or their eggs. Its nest is made usually in a hole in a wall, sometimes in a decayed tree, and contains five eggs of a very delicate uniformly pale blue.

31. There is never any difficulty in discovering the nest of the Starling, for if it builds in a hole of a wall it generally leaves several straws sticking out, as if to indicate the locality; and when it goes to take food to its young, both

parent and children set up such an outcry, that it may be heard a long way off.

. THE GROSBEAK is not a very rare bird, although it is but seldom seen. This fact is accounted for by its great shyness and dread of mankind; so that, although it remains in this country throughout the year, it seldom ventures out of the thick woods in which it delights to dwell. The nest of this bird is very shallow, and slightly put together, being hardly superior to that of the wood-pigeon. The eggs are from four to six in number, of a greenish white, covered with dark marks and spots. The length of the Grosbeak is seven inches.



The Grosbeak.

THE GOLDFINCH, or *Thistledfinch*, so called on account of its fondness for the down of the thistle, is one of our most beautiful birds. Where thistles abound, small flocks of goldfinches may be seen flying from hedge to hedge, and occasionally pecking the white tops of the thistles. The tufted seed of the dandelion, groundsel, and other plants, is also eaten by the Goldfinch. In captivity it is very tame, and can be trained to perform a multitude of tricks, the most common of which are, drawing its own food and water with a chain and bucket, or firing a gun when commanded. The nest is very beautiful, being mostly made of wool and down from various plants, and is usually placed on the extremity of a spray. The eggs are small, of a whitish tint, spotted with orange brown.

THE COMMON LINNET frequents commons and neglected pastures. Its song is very sweet, and many bird-fanciers suppose that the mixed breed of a canary and a linnet has a sweeter song than either bird. Its nest is usually built in the centre of a large and dense bush. The eggs are five in number, greyish white, speckled with red.

THE GREENFINCH, or *Green Linnet*, is larger than the common linnet. It frequents gardens, shrubberies, and cultivated

lands, and feeds on insects or seeds. The notes of this bird are not peculiarly melodious, nor has it many qualifications to entitle it to notice.

THE CANARY.—In its native islands, the Canary-bird is of a dusky grey color, and so different from those usually seen in the United States, that some have even doubted whether it be of the same species. With us, they have that variety of coloring usual in all domestic fowls; some white, some mottled, some beautifully shaded with green; but they are more esteemed for their note than their beauty, having a high piercing pipe, as indeed all those of the finch tribe have, continuing for some time in one breath without intermission, then raising it higher and higher by degrees, with great variety.

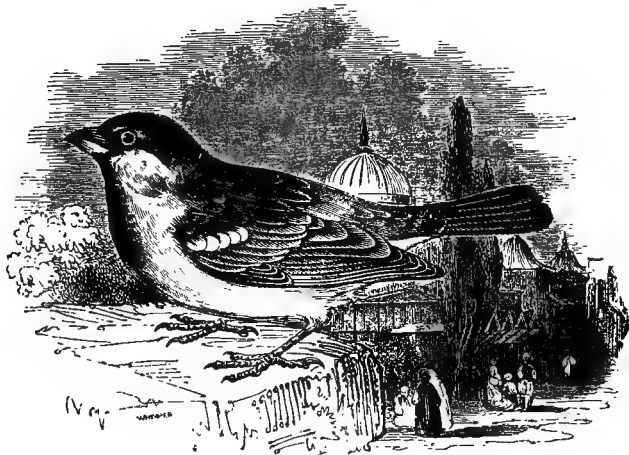
In choosing the Canary-bird, those are best that appear with life and boldness, standing upright upon the perch, like a sparrowhawk, and not apt to be frightened at everything that stirs. If its eyes look cheerful and not drowsy, it is a sign of health; but, on the contrary, if it hides its head under the wing, gathers its body up, these are symptoms of its being out of order. In choosing them, the melody of the song should also be minded: some will open with the notes of the nightingale, and running through a variety of modulations, end like the tit-lark. Others will begin like the sky-lark, and, by a soft melodious turn, fall into the notes of the nightingale. These are lessons taught this bird in its domestic state, and generally taught it by others; but its native note is loud, shrill, piercing, and enough to deafen the hearers. There are persons who admire each of these songs, but the second is in the most general estimation.

Canary-birds sometimes breed all the year round; but they most usually begin to pair in April, and to breed in June and August. Those are said to be the best breeders that are produced between the English and the French.

The Canary-bird, by being kept in company with the linnet or the goldfinch, pairs and produces a mixed breed, more like the Canary-bird, and resembling it chiefly in its song. Indeed, all this tribe, with strong bills and piercing notes, and feeding upon

grain, have the most strong similitude to each other, and may justly be supposed, as Mr. Buffon imagines, to come from the same original.

THE SPARROW has a conical, straight, and sharp-pointed bill. Under this genus there are more than a hundred species, chiefly distinguished by their color. The chief feathers of the wing and tail are brown, those of the breast dark, and those of the body grey and black. They have three broods in the year. They



The Sparrow.

delight to live near the habitations of men. They build their nests about houses, wherever they can find admittance. Their nests are built slovenly, generally consisting of a little hay lined well with feathers, where they lay five or six eggs of a reddish-white color, spotted with brown. Sometimes they expel the martins from their nests, to save the trouble of building one of their own. There is an instance upon record of the martins having shut the door of one of their nests with clay, which a sparrow had unjustly taken possession of, and thus the usurper was im mured in dark and solitary confinement. In spite of every pro

caution, sparrows will mingle with domesticated fowls, and partake freely and confidently of the food thrown out to them.

THE YELLOW HAMMER, or *Yellow Bunting*, is a very delicately marked little bird, very common in our hedges, where it flits before the traveller, always keeping about twenty yards in front. It makes its nest on the ground, and lays five eggs curiously scribbled over with dark chocolate lines, just as if a child had been trying to write Arabic on the eggs.

The nest is made on the ground, frequently in the print of a horse's foot, and contains five eggs of a greenish-white, thickly spotted with brown. There are generally two broods in the year, one in May, and the other in July or August.

THE BULLFINCH is a singular instance of the power of art on the song of birds. The natural note of the Bullfinch is low, and can only be heard at a short distance; but when well trained the bird whistles, or "pipes," as it is called, any melody which has been taught it, in a fine flute-like tone. A good piping Bullfinch sells at a very high price. The method of teaching is to confine the birds in a dark room, and, before their food is given, to play the air that they have to learn, on an instrument called a bird-organ. The birds soon begin to imitate the notes, and by degrees the whole tune is learned. Some trainers substitute a small clarionet for the bird-organ.

When in captivity the Bullfinch is very sociable, and soon learns to know his owners, and to come to them if called. The nest is built on the branches of a fir-tree. The eggs are bluish-white, spotted with red.

A lady opening her window, saw a bullfinch sitting on the sill. To her surprise the bird did not fly away, but suffered itself to be taken and carried into the room. When placed on the table it still sat quiet, but looked as if it were suffering from illness. On examination, a seed was found to be fixed in the bird's throat. This was quickly removed with a needle, and the bird became quite lively. It, however, soon met with a tragical end, for while a cage was being prepared for its reception, it escaped from the

hands of its benefactress, flew against a window pane, and instantly fell dead on the floor.

THE CROSSBILL is instantly known by the crossed points of the beak, and the horny scoop at the tip of the tongue. It uses these tools to open the fir-cones, on the seeds of which it feeds. The bird inserts both its mandibles under the scales of the cone, then by separating them the scale is raised up, while the seed is scooped out by the horny tip of the tongue. This singular structure of the beak enables the bird to divide an apple in halves, so as to get at the pips. Although the crossed mandibles appear rather a barrier to picking up small objects, yet the Crossbill can pick up and husk the smallest seeds, or shell almonds, which latter feat is accomplished by picking a hole in it and then wrenching it open, just as an idle schoolboy opens a nut with his penknife when he ought to be using that instrument in the more legitimate operation of mending his pen.



Crossbill.

Mr. Yarrell gives an amusing account of a pair of crossbills, who amused themselves by twisting out the wires of their cage. They actually succeeded in pulling out a flat-headed nail used to confine the network, but the bird lost the point of his bill in his efforts. They were at last banished on account of their unceasing destruction of cages.

THE RHINOCEROS HORNBILL. — This singular and almost startling family comprises but few species, which are all natives of India and Africa. The enormous bill, with its incomprehensible appendage, although of course heavy, is really much lighter than it looks; being composed of a kind of light honeycombed structure. The upper protuberance is hollow, and the only conjecture formed of its use, is that it serves as a sounding-board to increase the reverberations of the air, while the bird is uttering its peculiar roaring cry.

In spite of the apparently unwieldy bill, the bird is very

active, and hops about the branches of the trees with much ease. The appendage to the upper mandible is small when the bird is young, and only attains its enormous size when the Hornbill has reached its full growth. The bill of the hoopoes presents a somewhat analogous peculiarity, as when the bird is young the bill is short and pointed, and increases with the size of the bird. From this circumstance, together with some other resemblances, some naturalists imagine that there is an affinity between the hornbills and hoopoes.



Rhinoceros Hornbill.

The Hornbills seem to be omnivorous, fruits, eggs, birds, reptiles, etc., forming their food. The African Hornbills are extremely fond of nutmegs, and are, on that account, said to be peculiarly delicate eating, reminding one of the Barmecide's memorable lamb fed on pistachio nuts. The Rhinoceros Hornbill is a native of India, and the Indian islands. The length of its bill is usually about ten inches.

THE TOOTH-BILLED PERCHERS.

THE NIGHTINGALE.—In the beginning of May, the Nightingale prepares to make its nest, which is formed of the leaves of trees, straw, and moss. The nest being very eagerly sought after, is as cunningly secreted; so that but very few of them are found by the boys when they go upon these pursuits. It is built at the bottom of hedges, where the bushes are thickest and best covered. While the female continues sitting, the male at a good distance, but always within hearing, cheers the patient hour with his voice, and, by the short interruption of his song, often gives her warning of approaching danger. She lays four or five eggs; of which but a part in our cold climate come to maturity.

The delicacy, or rather the fame, of this bird's music, has induced many to abridge its liberty to be secured of its song. Indeed, the greatest part of what has been written concerning it in every country, consists in directions how to manage it for domestic

singing; while the history of the bird is confined to dry receipts for fitting it to the cage. Its song, however, in captivity, is not so very alluring; and the tyranny of taking it from those hedges where only it is most pleasing, still more depreciates its imprisoned efforts.

THE REDBREAST, or *Robin Redbreast*, as it is affectionately termed, has, by its fearless conduct, earned itself golden opinions from all kinds of men. Every nation seems to protect it. In the winter, when the berries are gone, insects dead, and the worms hidden under the hard frozen soil, then the Robin flies for refuge to the habitations of man for shelter and food. It is very amusing to see the half trusting, half fearful look with which it hops to the window-sill for the first time. After a while, it becomes bold, and taps at the window, if the expected crumbs are not thrown out. Before very long, it ventures to enter the room, hops about on the table, and quite seems to consider as a right what was first merely a favor. When once established, it is very jealous, and will not suffer a friend to be partaker of the same comforts, but attacks him with the greatest fury; so the unfortunate second comer has to wait shivering outside the window, with his feathers puffed up, and his little bright eye glancing from the depths of the plumage.

The nest of this bird is built in a crevice of an old ivied wall, in a bank, sheltered by the roots of trees, or in a mass of ivy clinging to an old tree. The eggs are five in number, of a pale grey color, profusely marked with reddish spots.

THE GREAT TITMOUSE is common in England, frequenting gardens, orchards, copses, etc. During the spring it is very active in the capture of insects, but in autumn and winter it is forced to content itself with grains and seeds of various descriptions. Gilbert White, in his "Selborne," mentions that he has seen the Great Tit "while it hung with its back downwards, to my no small delight and admiration, draw straws lengthwise from the eaves of thatched houses, in order to pull out the flies that were concealed among them, and that in such numbers that they quite defaced the thatch, and gave it a ragged appearance."

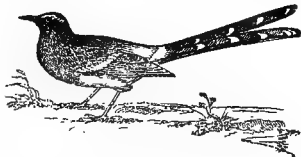
56. The nest of this bird is built in a hole of a wall, or a decayed tree, and in it are placed six or eight eggs, of a white color, spotted with reddish brown. The length of the bird is about six inches

THE LITTLE BLUE TITMOUSE is most amusingly courageous, and from the strenuous resistance it offers to its capturer, has acquired from rustic boys the name of "Billy-biter." The angry hiss of the female has frequently caused an intruding hand to be rapidly withdrawn, for the sound is so exceedingly like the hiss of an irritated snake, and the little beak is so sharp, that few have the courage to proceed with their investigations. A pair of these birds built their nest in the coping of the Great Western Railway, at the Shrivenham station, England, not two feet from the fiery and noisy engines, which were constantly passing. The men respected the courage of the little birds, and this whole brood was hatched, and suffered to fly at liberty.

THE LONG-TAILED TITMOUSE, unlike the other Tits, does not frequent human habitations during the winter, but may be seen in great numbers twisting and creeping about the branches of hedge-rows and field trees. In the summer they are quite as bold as their relations, and especially favor apple-trees, for the sake of the diseased buds, which they pick off and devour, thereby drawing upon themselves the vengeance of the gardener, who prepares his gun, fires at the supposed depredators, and possibly succeeds in killing them; but he has also succeeded in doing more damage to the healthy buds by his spare shot, than a score of tits would injure during the entire season.

THE WAGTAILS, so named from the almost incessant vibration of their tails, are exclusively confined to the Old World. The Pied Wagtail is the most common of its race. We often see it pass rapidly, with its peculiar dipping flight; it settles on the ground and wags its tail; it runs a few paces, and wags its tail again; pecks at an insect, and its tail again vibrates, etc. It does not hop, like the warblers, finches, etc., but runs with great rapidity, and altogether looks very like a diminutive magpie. Sand banks by the sides of rivers are the usual resort of these

birds, where they may almost always be seen, running about by the water's edge, sometimes snatching at an incautious may-fly, sometimes wading into the water after a caddis-worm or a stray grub,—nor is it quite safe for a minnow to come too near the surface,—and then flying off to another spot to repeat the same manoeuvres. This bird also greatly frequents pastures, and may be seen running about among the cows in the most nonchalant manner imaginable, catching the flies that torment



Wagtail.

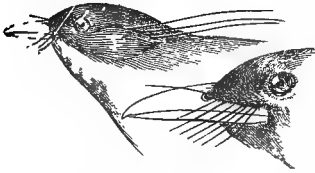
those animals in the summer, or flying off to its unfinished nest with a beak full of hairs. Their nests are built near the water, in crevices among stones, or in the hole of a wall. Frequently when stones are piled by a wet quarry, several nests may be found in one heap of stones. The eggs are four or five in number, of a dusky white color, spotted with ashy brown. The length of the bird is seven inches and a half.

THE MEADOW PIPIT, more commonly called the Titlark, resembles the true larks in the long hind claw and peculiar plumage, but is pointed out as distinct, from the different color of the bill. Like the skylark, it sings while in the air, but sometimes also pours forth its musical strains while settled upon the ground. It feeds principally on slugs, worms, and insects, which it chases with much activity, after the manner of the wagtails, even vibrating its tail like them. Hilly grounds, commons, and meadows are its chief resort in summer, but during September and October flocks of these birds may be seen congregated in turnip fields, and in the winter they seek the protection of the warm hedge-rows.

The nest of the Titlark is made on the ground, concealed by a tuft of grass. There are usually five or six eggs, light brown in color, spotted with a darker tint. The length of the bird is six inches.

THE MISSELTOE THRUSH, or *Stormcock*, according to Watterton, "surpasses all other thrushes in size, and is decidedly the

largest songster of the European birds. He remains with us the whole of the year, and he is one of three birds which charm us with their melody during the dreary months of winter, when the throstle and lark are silent, and all the migratory birds have left us, to sojourn in warmer climates. He appears to be gregarious in the months of August and September."



Thrushes.

It is very fond of the berries of the misseltoe, but when they fail it turns its attention to those of the mountain ash, which are almost certain to attract this beautiful and powerful songster. In the summer it devours all kinds of garden fruits, especially cherries and raspberries.

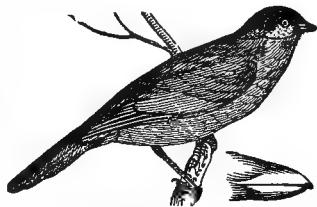
During the breeding season it is very pugnacious, attacking and driving away not only small birds, but the crow, the magpie, or even a prowling cat. The nest is very large, always built in a tree, and containing about five reddish spotted eggs. The length of the bird is eleven inches.

THE SONG-THRUSH, *Throstle*, or *Mavis*, is deservedly considered one of the best of the English singing birds. Its powerful and rich notes may be heard even during the month of January, when most of the other singing birds are either silent, or have departed. Its nest is built almost before any other bird has commenced, and may often be seen conspicuously placed in a bush, some time before the leaves have begun to sprout. In order to defend the callow young from the cold winds of the season when they are hatched, the nest is more substantial than birds are accustomed to build, being thickly plastered within with a coating of mud, effectually keeping out the chilly blasts.

THE BLACKBIRD is another delightful English songster, whose jetty hue and orange-tawny bill are too well known to need description. It is a very shy bird, and if disturbed in a hedge, has a habit of darting through it, and then escaping on the other side, uttering a sharp cry of alarm. The habits of this bird are

not unlike those of the thrush, especially in its zeal for unearthing the cockchafer-grubs, and possibly for eating cherries when they are ripe. Its nest is built usually at the foot of a hedge, frequently in the very centre of a holly bush, safe from most enemies but weasels, etc.

THE MOCKING BIRD, or *Polyglot Thrush*, is a native of most parts of America. This wonderful bird stands pre-eminent in powers of song. Not only are its natural notes bold and spirited, but it has the faculty of imitating with deceptive fidelity every sound it hears. To its flexible organs, the harsh setting of a saw, the song of a nightingale, the creaking of a wheel, the whistled tune of a passer-by, the full and mellow notes of the thrush, the barking of a dog, the crowing of a cock, and the savage scream of the bald eagle, are each equally easy of execution, and follow one another with such marvellous



- Mocking Bird.

rapidity that few can believe that the insignificant brown bird before them is the sole author of these varied sounds. The Virginian nightingale and the canary hear their exquisite modulations performed with such superior execution, that the vanquished songsters are silent from mere mortification, while the triumphant Mocking-bird only redoubles his efforts. Wilson, whose animated description of this bird has never been surpassed, says: "His expanded wings and tail glistening with white, and the buoyant gaiety of his action arresting the eye, as his song does most irresistibly the ear, he sweeps round with enthusiastic ecstasy, and mounts and descends as his song swells or dies away. He often deceives the sportsman, and sends him in search of birds that are not perhaps within miles of him, but whose notes he exactly imitates: even birds themselves are frequently imposed upon by this admirable mimic, and are decoyed by the fancied calls of their mates, or dive with precipitation into the depth of thickets at the scream of what they suppose to be the sparrow-hawk."

While its eggs are hatching it is an exceedingly courageous bird, attacking without discrimination man, dogs, or any animal who may approach too near the nest. But the black snake is the special object of its vengeance. The snake, which has perhaps just arrived at the vicinity of the nest, and is contemplating a pleasant breakfast on the young or eggs, is violently attacked by the enraged Mocking-bird, who, by repeated blows on the head, generally destroys its enemy, and then mounting upon a bush, pours forth a triumphant song of victory.

The nest is made generally in a bush or apple-tree, frequently close to houses, as the bird is protected by the inhabitants. The Mocking-bird is often kept tame, in which case, so far from its imitative powers showing any decrease, the variety of domestic sounds heard about the house is often very perplexing.

THE GOLDEN ORIOLE is a very shy bird, frequenting the skirts of woods, especially copses that border on larger woods. In



Golden Oriole.

the fruit season it leaves the woods for the orchards, and makes no small havoc among the fruit, particularly the figs, grapes, and cherries. The nest is made of wood and fine hay; it is generally placed on the fork of a bough. The eggs are five in number, of a purplish

white, spotted with reddish marks. The length of the bird is rather more than ten inches.

THE SPOTTED FLYCATCHER may be considered as the type of the entire family. It may be constantly seen in gardens and orchards, going through the evolutions that have given it the names of Flycatcher, Post-bird, Beam-bird, etc. It takes its station on some elevated spot, such as the overhanging bough of a tree, a post, or a rail, and from thence watches for a passing insect, on seeing which it darts from its post, secures the insect in the air, and returns to the same spot by a short circular flight. It is not a timid bird, and will permit an observer to stand quite close to it, provided that he does not disturb it.

“I have seen,” says Mr. Wood, “one of these birds engaged in the pursuit of flies in a garden at Headington. It perched on a balustrade close to a window from which several persons were watching it, and continued its evolutions perfectly undisturbed by their proximity. On another occasion I was keeping watch in a gig in Nuneham Park, and to pass away the time, amused myself with cutting off the heads of the white clover with the lash. While so engaged, a spotted flycatcher came and took up its station on a bough close by the gig, from which it made excursions among the flies and other insects that were driven from the grass and flowers by the whip.”

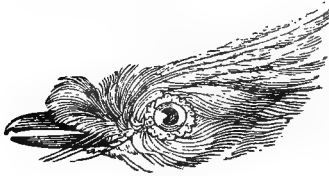


Spotted Flycatcher.

It is a summer visitor to England, arriving in May and departing about the beginning of October. The note of this bird is a weak chirp, and even that is not often heard. The nest is built usually in holes of trees or walls, or sometimes between a branch of a wall-fruit tree and the wall itself. The eggs are five in number, spotted with reddish brown on a grey ground. The length of the bird is about five inches.

THE GREAT GREY SHRIKE feeds upon mice, birds, frogs, and other small animals. After pouncing upon its prey, the Shrike, by a few blows on the head from its powerful bill, destroys it. The unfortunate animal is then carried to the nearest hedge, impaled on a thorn, and the Shrike devours it at his leisure. Large insects are treated in the same manner. The object of this impalement is apparently that the creatures thus suspended should become tender or “high,” so that the modern epicure, who hangs up his venison until no one with an unsophisticated taste would venture to touch it, has but borrowed his custom from the Shrike. The bird, after hanging a lizard or a mouse in this fashion, generally goes off and fetches another, always preferring to eat those which have remained longest on the thorn, and which are as it were cooked in the sun

There is a strong bodily resemblance between this Shrike and the Mocking-bird, the distinction lying generally in the out-



Head of Shrike.

line, while the plumage is so similar that many persons have actually confused the two birds, giving to one the habits of the other. Moreover, the resemblance is not merely in outward form. The Grey Shrike can also imitate

the notes of other birds, and often does so. Audubon, in his work on the American birds, has this passage :

“ This valiant little warrior possesses the faculty of imitating the notes of other birds, especially such as are indicative of pain. Thus it will often mimic the cries of sparrows and other small birds, so as to make you believe you hear them screaming in the claws of a hawk ; and I strongly suspect this is done for the purpose of inducing others to come out from their coverts to the rescue of their suffering brethren. On several occasions I have seen it in the act of screaming in this manner, when it would suddenly dart from its perch into a thicket, from which there would immediately issue the real cries of a bird on which it had seized. On the banks of the Mississippi, I saw one which for several days in succession had regularly taken its stand on the top of a tall tree, where it from time to time imitated the cries of the swamp and song-sparrows, and shortly afterwards would pitch down like a hawk, with its wings close to its body, seldom failing to obtain the object of its pursuit, which it would sometimes follow even through the briars and brambles among which it had sought refuge. When unable to secure its prey, it would reascend to its perch, and emit loud and discordant notes of anger. Whenever I could see it strike its victim, it appeared to alight on its back, and instantly strike its head, which on such occasions I have several times found torn open. If not disturbed, the Shrike would then tear up the body, and swallow in large pieces, not well cleaned of the feathers,

every part excepting the wings. It now and then pursues birds that are on the wing to a considerable distance.

The name *Excubitor* or *Sentinel* is given it from its habit of watching for birds of prey, and chattering loudly directly it perceives them; thereby proving that, like most other tyrants, he has a great objection to suffering any injury himself. The bird-catchers on the continent of Europe take advantage of this peculiarity, to assist them in the capture of the peregrine falcon. The fowler places a small net on the ground, with a pigeon fastened to it by way of bait. A string is attached to the net, and brought within a turf hut where the fowler sits. Close to the hut a shrike is tied to the ground, and two pieces of turf are set up as a shelter for the bird from the weather, and as a refuge from the hawk. The fowler remains within his hut busied with some sedentary occupation, knowing well that his vigilant watchman will not fail to give him notice of the approach of a hawk. Directly a hawk appears in the distance, the shrike becomes agitated; as it draws nearer, he begins to scream with fright; and just as the hawk pounces on the pigeon, he runs under his turf, which is the signal to the fowler within the hut to pull the string, thereby enclosing the hawk within the folds of the net.

The nest is built on trees, and contains about six eggs, greyish-white, spotted with dark ash on the larger end; the length of the bird is from nine to ten inches.

THE RED-BACKED SHRIKE is much more common than the last-mentioned bird, and may be seen in and about hedges, throughout Great Britain, in the spring, when it is occupied in building its nest. It is rather a noisy bird, and the nest is so large as to be easily discovered. It feeds principally on insects, such as bees, beetles, etc., which may frequently be found impaled on thorns.

Mr. Wood relates that he found many insects impaled by this bird, but the insect most commonly found in this position was the *staphylinus erythropterus*; but he says he also found ground beetles and humble bees thus impaled.

These impaled insects form a very good indication as to the

locality of the nests, and are probably placed there for food; certainly not, as some authors have stated, for the purpose of decoying other birds to the spot in order to murder and devour them. The nest and eggs much resemble those of the Great Shrike, but are smaller. The length of the bird is seven inches and a half.

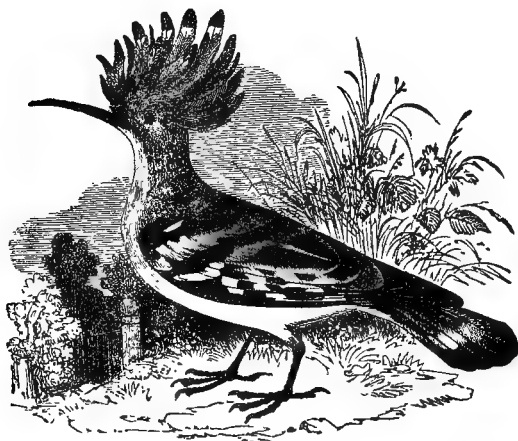
THE BOHEMIAN WAXWING, or *Waxen Chatterer*, occasionally seen in England during severe frosts, at which time flocks of them sometimes arrive, is very common in Norway and Russia, and plentiful in North America. The name of Waxwing is given to it from the singular appendages to the secondary quill feathers, bearing much resemblance to a drop of red sealing-wax pressed on the wing.

Berries of all kinds, especially those of the dog-rose and the hawthorn, form the principal food of this bird, but it is related that when in captivity it rejects scarcely any vegetable substance, losing at the same time all its vivacity and social habits. The note of the Waxwing is not unlike that of the thrush, but it is very weak and more uncertain than the notes of that beautiful songster. While singing it agitates the crest on its head, but shows scarcely any of that swelling in the throat so perceptible in the canary and other singing birds.

THE SLENDER-BILLED PERCHERS.

THE LAPWING, or *Hoopoe*, has the beak arcuated, convex, and something blunt; the tongue is triangular, entire, and very short, and the feet are fitted for walking. There are ten species, of which the Hoopoe is one. It is vulgarly, yet correctly called the dung-bird. It is a most polluted bird, exceeded by none in this respect. It feeds on insects and maggots, which it picks out of ordure of all kinds, and satiates its filthy appetite on human excrement. It delights to build its nest in situations the most offensive, and gives preference to putrid carcasses as its most delightful abode. There is no creature among the irrational tribes whose habits are more opposed to its external appearance. There are few birds to equal it in loveliness, none to equal it in abominable habits. It has upon its head a beautiful crest, which it can

erect or depress at pleasure. The length of the bird is fifteen inches; the bill is two inches and a half long, slender and incurvated. Its noble crest consists of two rows of feathers, the highest about two inches long; the tips are black, the lower part of a pale orange color; the neck is of a pale reddish brown; the breast and



The Lapwing.

belly white; the lesser coverts of the wing are of a light brown; the back and wings crossed with broad bars of white and black; the rump is snow-white; and the tail consists of ten white feathers, marked with black in the form of a crescent. The legs are short and black. This beautiful, yet filthy bird, was forbidden to be eaten by the Levitical law.

HUMMING BIRDS.—These little living gems are exclusively found in the New World, especially about the tropics, becoming gradually scarcer as we recede in either direction. Only two species are known to exist in the northern part of the Continent, but in the central portions and in the islands about Florida they absolutely swarm. They glance about in the sunshine, looking like streaks of brilliant light, and so rapid is the vibration of their fine and elastic wings, that when hovering over a flower, a hum-

ming or buzzing sound is produced, from which peculiarity the name of Humming Bird has been given them in almost every language.

The smallest Humming Bird is about the size of a hazel-nut. The feathers on its wings and tail are black; but those on its body, and under its wings, are of a greenish brown, with a fine red cast, or gloss, which no silk or velvet can imitate. It has a



Humming Bird.

small crest on its head, green at the bottom, and, as it were, gilded at the top; and which sparkles in the sun like a little star in the middle of its forehead. The bill is black, straight, slender, and of the length of a small pin. The larger Humming Bird is nearly half as big as

the common wren, and without a crest on its head; but, to make amends, it is covered, from the throat half way down the belly, with changeable crimson-colored feathers, that, in different lights, change to a variety of beautiful colors, much like an opal. The heads of both are small, with very little round eyes as black as jet.

Mr. Wilson says of it: "This little bird is extremely susceptible of cold, and if long deprived of the animating influence of the sunbeams, droops, and soon dies. A very beautiful male was brought me this season, which I put into a wire cage, and placed in a retired shaded part of the room. After fluttering about for some time, the weather being uncommonly cool, it clung by the wires, and hung in a seemingly torpid state for a whole forenoon. No motion whatever of the lungs could be perceived on the closest inspection; though at other times this is remarkably observable; the eyes were shut, and when touched by the finger it gave no signs of life or motion. I carried it out to the open air, and placed it directly in the rays of the sun in a sheltered situation. In a few seconds respiration became very apparent; the bird breathed faster and faster, opened its eyes, and began to look about with as much seeming vivacity as ever. After it had completely recovered I restored it to liberty; and it flew off to

the withered top of a pear-tree, where it sat for some time, dressing its disordered plumage, and then shot off like a meteor."

Fear will also produce the same effect, as they have repeatedly died when caught in a common gauze net, which does not injure even the delicate scales of the butterfly's wing. They are very quarrelsome little creatures, and frequently fight with expanded crests and ruffled feathers, until they fall exhausted to the ground.

The nests are very neat and beautiful, and, as may be imagined from the diminutive size of the little architect, exceedingly small. They are composed of down, cotton, etc., and are sometimes covered on the outside with mosses and lichens. Waterton relates a curious formation of the nest of one particular species, whose habitations are built at the extremity of thin branches.

"Instinct teaches one species, which builds its nest on the slender branches which hang over the rivers, to make a rim round the mouth of the nest, turned inwards, so as to prevent the eggs from rolling out. . . The trees on the river's bank are particularly exposed to violent gusts of wind, and when I have been sitting in the canoe and looking on, I have seen the slender branch of the tree which held the humming-bird's nest so violently shaken, that the bottom of the inside of the nest has appeared, and had there been nothing at the rim to stop the eggs, they must inevitably have been jerked out into the water."

THE WREN shares with the robin some immunity from juvenile sportsmen. Although it may be fearlessly hopping about in the hedge, jerking its funny little tail, and playing its antics just at the muzzle of the gun, few boys will fire at it.

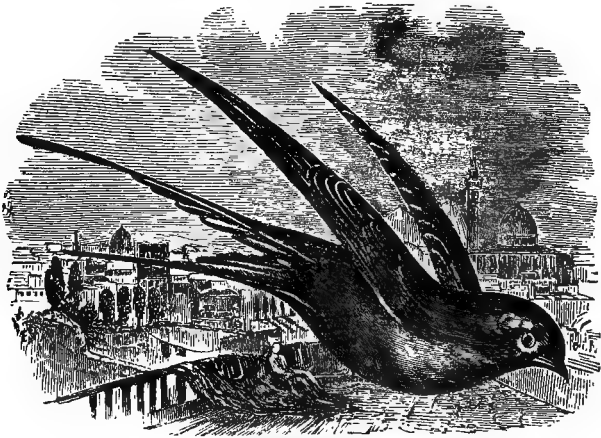
A singular anecdote is related of this bird: "In the end of June, 1835, a person was shooting in the neighborhood of Bandrakehead, in the parish of Colton, Westmoreland, England: he killed a brace of blue titmice, which some time before had been observed to be constructing a nest, in the end of a house belonging to a Mr. Innes, of the same place. In the course of the day, it was ascertained that the titmice had completed the time of incubation, and that their death had consequently left

their offspring in a state of utter destitution. This, however, was not long permitted to continue, for the chirping of the young birds attracted the attention, and excited the compassion of a wren; which, since that period, adopted the nestlings, and was daily engaged in rearing and feeding them, with the affectionate kindness and unremitting assiduity of a parent bird."

The nest of the Wren is built in any convenient cranny; an ivy-covered tree, the thatch of a barn, or a warm scarecrow, are all used by this fearless little bird. The nest is usually of an oven-like shape, always covered on the outside with some material resembling the color of the objects round it, such as green moss if built among ivy, or brown lichen if built on a rock or in the fork of a withered branch. The eggs are six or eight in number, white, speckled with reddish brown.

THE GAPING-BILLED PERCHERS.

THE SWALLOW.—There are thirty-seven species, chiefly distinguished by their color. The voice is a peeping sound, the



The Swallow.

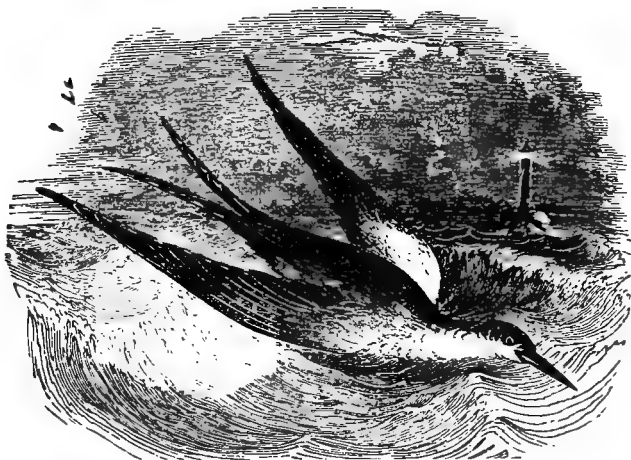
predominant color black, the sight quick, and in its flight very unequal. It builds its nest of clay. Often a considerable number

will assist in repairing a nest if it has unfortunately sustained any injury. Swallows resemble sparrows in discovering a strong attachment to the dwellings of human beings, where they build their nests in the corners of windows, under the eaves, and in old chimneys. From year to year they will build in the same place. It is striking, that though they migrate to distant nations, they will return next season exactly to the same spot they had left; thus discovering on the one hand a remarkable instinct, and on the other a strong attachment to the place of their nativity. In spring and summer they take up their abode in temperate climates, and in harvest and winter they retire to warmer, and are said to breed in both. It appears an authenticated fact, that great numbers of them continue in cold countries during the winter in a benumbed state. They have been found in such circumstances in clusters in holes of walls, banks of rivers, and even under water in marshes and lakes.

THE CHIMNEY MARTIN or SWALLOW is the most common of its family, and too well known to need much description. When skimming over ponds or rivers in search of insects, the snap with which it closes its bill may easily be heard. It also dashes up the water with its wings, which action gave rise to the opinion that swallows passed the winter under water, and rose in the spring. It may be easily caught with a rod and line baited with a fly, after the manner of anglers. It breeds twice in the year, building a nest of mud against a wall or other convenient situation, and laying five very pale pink eggs, spotted with reddish brown, the pink of which vanishes when the egg is emptied of its contents, as it is caused by the light passing through the yolk, and has to be renewed by artificial means if the egg is placed in a collection. The same is the case with most small light-colored eggs. The bird appears regularly to return, year by year, to its old nest. The whole of its upper surface is a deep purplish black, its forehead and throat chestnut.

THE SEA SWALLOW.—The characteristic marks of the Sea Swallow are as follows: The bill is straight, slender, and pointed; the wings are of a very considerable length; the tail is forked;

the toes are four in number, as in other swallows, three before and one behind, and there is a little web or membrane filling half the space betwixt the toes. In addition to this, it may be stated that the bill is smooth, without any provision for breaking or grinding, as the French would say, *sans dentelures*, and flattened along the sides; and the feet are short and small. Like other aquatic birds,



The Sea Swallow.

there is a small portion of the legs naked and without feathers, by which they are enabled to propel themselves with greater ease through the watery element. The body is covered with down, abundant and close.

The family of the Sea Swallow is found both in Europe and Asia, and also in the islands of the Pacific. In flying their cry is acute and piercing; in calm weather they sometimes elevate themselves to an astonishing height, and before their migratory flights, they assemble together in great multitudes. It is remarked, that they are never so noisy and restless as at the time of building their nests. They live on little fish and winged insects.

THE ESCULENT SWALLOW, whose nests are considered such a delicacy among the Chinese, builds its singular habitation in the

sides of almost inaccessible cliffs, so that the business of procuring them is a most dangerous task. The nature of the jelly-like transparent material of which the nests are made is not yet known. The nests are found in Java.

THE ROLLER is plentifully found in most parts of Europe, but has seldom been seen in England. Its mouth is slightly furnished with vibrissæ or long bristly hairs, like those of the night-jar. It is a very shy bird, frequenting the depths of the forests. It builds its nest in hollow trees — some say in banks — and lays from four to seven white eggs, very like those of the kingfisher. Its legs are short, and the upper mandible is bent over the lower at the extremity. The coloring is brilliant, shades of blue and green prevailing. Its length is about thirteen inches.

THE TROGON.—The magnificent family of the Trogons stands pre-eminent in beauty and brilliancy of plumage, the usual tint being a metallic golden green, boldly contrasted with scarlet, black, and brown. The toes are placed two behind and two before,



Trogon.

like those of the woodpeckers. The *Resplendent Trogon* is the most gorgeous of all this gorgeous family. Its long and gracefully curved tail, nearly three feet long; the whole of the upper surface, and the throat, are a glowing green; the breast and under parts are bright crimson; the middle feathers of the tail black, and the outer feathers white. This splendid bird is an inhabitant of Mexico, and was used by the Mexican nobles as an ornament to their head-dress.

THE COMMON KINGFISHER is found in most parts of England. Scarcely anything more beautiful can be conceived than the metallic glitter of its plumage as it glides along the banks of the river, or darts into the water after its struggling prey. Its usual method of fishing is by placing itself on a stump or stone

overhanging the water, from which spot it watches for the unsuspecting fish beneath. After a fish is caught, the bird kills it by



Common Kingfisher.

beating it several times against its resting-place, and then swallows it, head foremost.

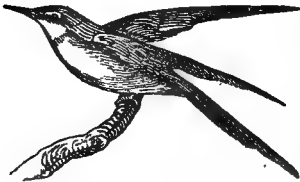
It lays its eggs in holes bored in the banks of rivers or ponds, and appears to build no nest. A



Crested Kingfisher.

pair of kingfishers, for two successive years, inhabited a bank of a very small stream, little more than a drain, at Little Hinton, Wiltshire, England, where no fish lived, nor were there any to be found within a considerable distance. The eggs are from four to seven in number, of a pearly whiteness, and remarkably globular in shape.

THE BEE-EATER is common on the Continent of Europe. In appearance it is not very unlike the kingfisher, both in shape and its brilliant colors. It has long been celebrated for the havoc it causes among the inhabitants of the hive, although it does not restrict itself to those insects, but pursues wasps, butterflies, etc., on the wing, with great activity. Like the kingfisher, it lays its eggs in holes



Bee-Eater.

bored in banks. The eggs are white, and from four to seven in number. Its length is eleven inches

CHAPTER XI.

DIVISION I.—VERTEBRATES.

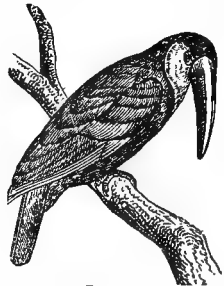
CLASS II.—BIRDS.

CLIMBERS, SCRATCHERS, AND RUNNERS.

ORDER III.—CLIMBERS.

UNDER the *Scansores*, or Climbers, we have those birds which have the external toe upon each side turned backwards, enabling them to grasp substances more firmly with their claws, and affording them a more sure support than other birds. This formation adapts them for climbing, as they can cling with considerable force to the rough bark and branches of trees. Of this order are the Toucans, the Parrots, the Woodpeckers, and the Cuckoos.

THE TOUCANS are all natives of tropical America. Their enormous bill is rendered light in the same way as that of the hornbills, by being chiefly composed of a honeycomb structure. It seems to be very sensitive, and well supplied with nerves, as the bird not only appears to enjoy holding meat or fruits with the tip of its bill, but has been seen to scratch that organ with its foot, plainly proving that there must be sensation. It seems to be omnivorous, but is particularly fond of mice, and small birds, which it kills by a powerful squeeze, then strips, and finally pulls to pieces and devours, having previously reduced its prey to a shapeless mass by repeated lateral wrenches with its enormous and saw-like bill. Waterton in his *Wanderings* describes the usual haunts of the Toucan.



Toucan.

“Heedless and bankrupt in all curiosity must he be who can journey on without stopping to take a view of the towering mora. Its topmost branch, when naked with age or dead by accident, is the favorite resort of the Toucan. Many a time has this singular bird felt the shot faintly strike him from the gun of the fowler beneath, and owed his life to the distance betwixt them.” In the same interesting and amusing work, he remarks a strange habit of the Toucan, called the Houtou by the natives.

“This bird (the Houtou) seems to suppose that its beauty can be increased by trimming the tail, which undergoes the same operation as our hair in a barber’s shop, only with this difference, that it uses its own beak, which is serrated, in lieu of a pair of scissors. As soon as his tail is full grown he begins about an inch from the extremity of the two longest feathers in it, and cuts away the web on both sides of the shaft, making a gap about an inch long: both male and female adorn their tails in this manner, which gives them a remarkable appearance amongst all other birds.”

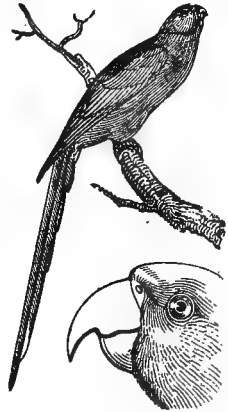
THE MACAWS are natives of South America. The blue and yellow Macaw inhabits Brazil, Guiana, and Surinam, living principally on the banks of rivers. Of one of the Macaws, the Carolina Parrot, or Parrakeet, as Wilson calls it, the following anecdote is told by that enterprising naturalist:—

“Having shot down a number, some of which were only wounded, the whole flock swept repeatedly round their prostrate companions, and again settled on a low tree, within twenty yards of the spot where I stood. At each successive discharge, though showers of them fell, yet the affection of the survivors seemed rather to increase, for after a few circuits round the place they again alighted near me, looking down on their slaughtered companions with such manifest symptoms of sympathy and concern, as entirely disarmed me.”

THE RINGED PARRAKEET is frequently seen domesticated in this country, where its pleasing manners and gentle disposition render it a great favorite. It seems to be exceedingly fond of ripe walnuts, divided in halves, and while it is picking out the

kernel, continually utters a short clucking sound, indicative of pleasure.

It soon learns to repeat words and short sentences, and to speak with tolerable distinctness. Sometimes when excited it utters most ear-piercing screams, and always appears to practice any new accomplishment when it thinks that no one is within hearing. The color of the bird is green, and a rose-colored band round its neck gives it the name of the Rose-ringed Parrakeet. The bill is red.



Ringed Parrakeet.

THE COCKATOOS are remarkable for the powdery surface of their wings, and the crest on the head, which can be raised or depressed at pleasure. The Sulphur-crested Cockatoo is an inhabitant of New Guinea. Its color is white, and the crest is of a sulphur yellow. Its white plumage glancing among the dense dark foliage of its native forests, imparts a wonderful beauty to the scene, and as Sir Thomas Mitchell remarks, "amidst the umbrageous foliage, forming dense masses of shade, the white cockatoos sported like spirits of light." This Cockatoo is easily tamed, and is of a very affectionate disposition. When in captivity it has been known to live to the age of 120 years. Its nest is built in hollow trees and the crevices of rocks. The eggs are white. The length of the bird is about eighteen inches.



Sulphur-crested Cockatoo.

THE WOODPECKERS, whose name indicates their habits, are widely spread, being found in all quarters of the globe except Australia. They subsist on insects and grubs, which they dig out of trees, or discover under the bark. For this purpose,

their whole structure is admirably adapted. The bill is long, sharp, and powerful, and the formation of the feet and legs is such that the bird is able to grasp the tree firmly with the feet, while



Woodpecker.

swinging with the force of his whole body against it. Another most singular point in the Woodpeckers, is the method by which they are enabled to thrust the tongue deep into the crevices, and bring out any insects that may happen to be there. The tongue is connected with two elastic ligaments, which are inserted near the juncture of the upper mandible with the skull. From thence they sweep round the back of the head, and passing under the lower

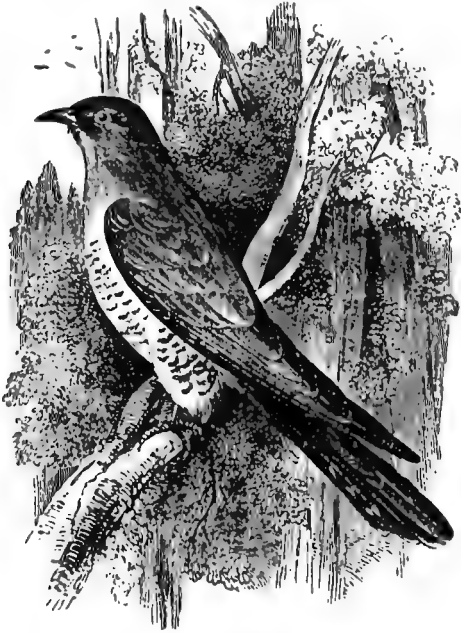
mandible, enable the tongue to be thrust out a considerable distance. The tip of the tongue is sharp, and barbed with several filaments, and more firmly to secure the prey, a kind of gummy secretion causes those insects to adhere, that would be too small to be impaled.

It appears to be an erroneous opinion that these birds injure trees. Their only object in pecking away the wood and bark, is to get at the insects which they know are hidden within. Now insects seldom or never bore into healthy wood, but a decayed branch or stump is always full of them, as is well known to the entomologist. So the winged entomologist, when he perceives a decayed branch, or finds an unsound spot in the trunk, immediately sets to work industriously, and is rewarded by finding plenty of insects, which he draws out and demolishes, with more benefit to himself, and possibly more good to others, than many human entomologists can boast.

The Green Woodpecker, by far the most common, may be often seen in woods, tapping the trees with wonderful rapidity, the blows following each other something like the sound of a watchman's rattle. It generally runs up the trunk of the tree in a spiral direction, occasionally striking off large pieces of dry bark. When it descends it still keeps its head uppermost.

THE CUCKOO. — The characteristic marks are these: the

bill is smooth, or more or less bending; the nostrils are bounded by a small rim; the tongue is short and pointed; and the feet and toes are formed for climbing. There are forty-six species. Our limits will only allow us to give some description of *cuculus canorus*, or the *common cuckoo*. It weighs about five ounces; is in length fourteen inches; and in breadth, from tip to tip of extended wings,



The Cuckoo.

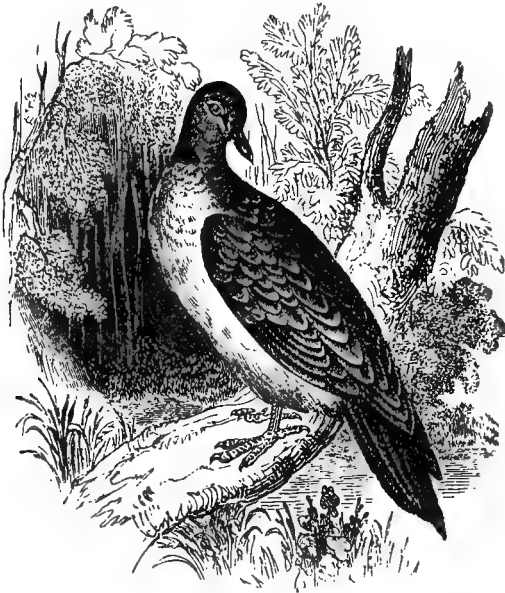
twenty-five inches. The bill is black, and about two-thirds of an inch in length. It is generally of a dove-color. The legs are short, and the toes four in number, two backwards, and two forwards, like those of the woodpecker. It departs from Europe in the end of harvest and returns in the spring. Summer is considered fairly commenced when the monotonous notes of this bird are first heard. And monotonous as its notes are, they are uni-

versally welcomed. The Cuckoo is silent some time after his arrival; and his note is considered as a love-call to his mate. It is very singular that this bird never builds a nest for herself, nor hatches her own eggs. She lays her eggs in the nest of another, and leaves her offspring to be nourished and brought up by a parent not their own. Unlike the generality of birds, cuckoos do not pair. The nests in which they generally deposit their eggs are those of the hedge-sparrow, the water-wagtail, the tit-lark, the yellow-hammer, the green-linnet, and the whinchat. The eggs of the Cuckoo are hatched about the same time with the eggs of these birds. And what is extraordinary, as soon as the young cuckoos are liberated from the shells, though blind, they immediately commence turning out all the young of the natural owner of the nest, and they continue their effort till they have removed them all, and thus retain full possession of the nest which their own unfeeling parent had usurped. The celebrated Dr. Jenner relates several facts connected with this strange procedure of the young cuckoos, which leave the matter without the shadow of a doubt. In migrating the greater part of these birds are supposed to go into Africa, as they are observed to visit Malta twice a year. This bird was forbidden to be eaten by the Levitical law.

ORDER IV.—SCRATCHERS.

Of this order are the peacock, the turkey, the common fowl, the pheasant, the partridge, the quail, the pigeon, etc. Among them are nearly all those birds which have been domesticated, and are raised in poultry yards. Their wings are short and weak, and of course they are not constructed for long-continued flight; but they are capable of running with considerable rapidity. They have a large crop and a very powerful gizzard, their food consisting principally of hard grain. Their flesh in general furnishes excellent food. The males are distinguished by a stately gait, and frequently by a tail ornamented with long feathers. They do not live in pairs; their eggs are very numerous, and are laid in nests built of chaff or straw upon the ground. Their young are generally able to run about as soon as hatched.

THE TURTLE DOVE is a native of India. It is in length about twelve inches and a half; its breadth from tip to tip of wings extended, twenty-one inches; and its weight about four ounces. The iris of the eye is of a fine yellow color, and the eyelids encompassed with a beautiful crimson circle; the chin and forehead are whitish; the top of the head ash-colored and mixed with olive.

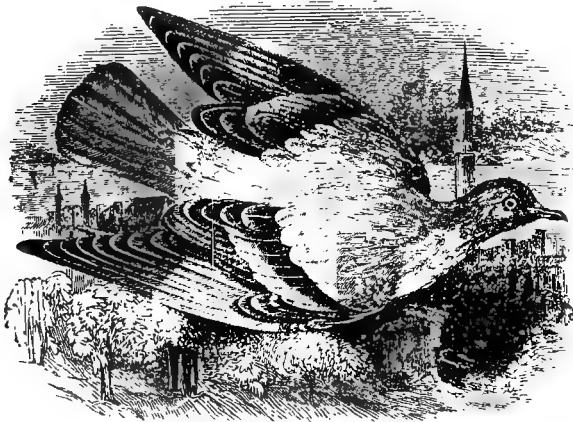


The Turtle Dove.

On each side of the neck is a spot of black feathers, prettily tipped with white; the back is ash-colored, bordered with olive-brown. The breast is of a light purplish red, having the verge of each feather yellow; and the belly white. The tail is three inches and a half in length; the two middle feathers of a dusky brown; the others black, with white tips; and the end and the exterior or outmost feathers all white. On the whole, it is a bird of remarkable elegance and beauty, ranking high among the numerous tribes

of winged creatures which the hand of God has so profusely adorned with the richest plumage and the most elegant form.

THE CARRIER DOVE.—Linnæus calls this most interesting, far-famed, gifted bird, by the name of *columba tabellaria*. The name is derived from a word signifying a letter. This dove is of a larger size than the greater part of pigeons, being fifteen inches in length, and sometimes weighing twenty ounces. The symmetry of its form is most superior and complete. Those which are of a



Carrier Dove.

blue, or of a blue piebald color, are most esteemed by pigeon-fanciers. We know not the country to which the *carrier* originally belonged. It is said to have been imported from Bussorah into Great Britain and the United States, where it is now completely naturalized.

If carrier pigeons are hoodwinked, and in this state conveyed from twenty to a hundred miles, they will find their way back to the place of their nativity. They are regularly trained to this service in Turkey and Persia. They are carried first, while young, short flights of half a mile, afterwards the distance is gradually increased, till at length they will return from the far-

the part of the kingdom, and even from foreign lands across the sea.

THE DOMESTIC DOVE.—Doves of this species when unclaimed have only two broods in the year, and lay their eggs in nests rudely formed in the holes of rocks and ruined towers. Do-



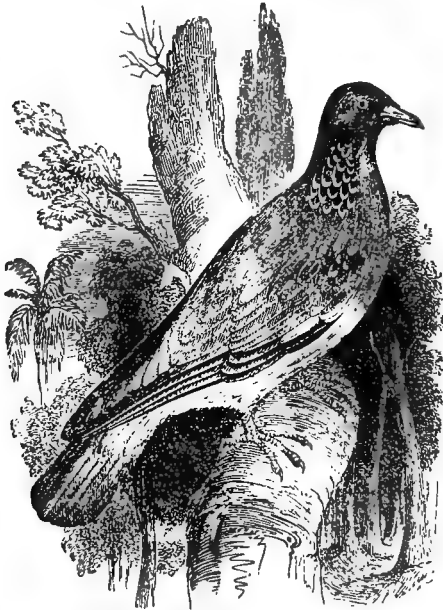
Domestic Dove.

mesticated, and allowed the rich supplies of the farmyard, they are surprisingly prolific, and produce a succession of broods from three to twelve times in the year. The usual number of eggs laid and hatched are two, one of which is commonly a male, and the other a female bird. The bird sits upon her eggs during the period of incubation, from fourteen to seventeen days. Domestic doves are kept almost in every part of the civilized world, as ho

young are reckoned a description of food remarkably delicate and palatable.

The varieties of the domestic pigeon are numerous. The most remarkable are the following: the *crested* pigeon, with hairy feathers on the feet, and a crest on the head, giving it an air of royal dignity; the *shaker*, with an erect, open tail of many feathers; the *tumbler*, that turns over in its flight; and the *pouter*, with the breast inflated.

THE RING DOVE, which is also known as the cushat and wood pigeon, is found almost in every country in Europe, and in



Ring Dove.

Syria and Palestine. Though it is most partial to the warmer climates, still in summer it is found in Sweden, Russia, and even Siberia. There is no doubt that it is a native of Britain; but

in England, as in France, it is in some degree a bird of passage, shifting from the northern to the southern parts of the island.

Its prevailing color is grey, the tips of the tail dark, and the neck white on each side. This species is large, measuring in length seventeen inches and a half, and twenty-nine inches in extent of wing.

Though very shy, some pairs have fixed their nests in the lofty trees of the gardens of the Tuileries and Luxembourg at Paris. They show the same sense of security as domestic pigeons, and as undismayed by the crowds of human beings which are constantly passing under their eye. There they rear their young without discovering any marks of uneasiness or fear. When, however, they repair to the neighboring fields for food, they show all the timidity which is so characteristic of the species. Their food chiefly consists of acorns, beech-mast, and various berries and grains. If these cannot be obtained, under the influence of the



The Peacock.

cravings of hunger they will crop the tender shoots of clover green corn, or turnips.

THE PEACOCK.—Its head is adorned with a most imposing ornament of feathers reversed, in the form of a plume. Indeed, this is a natural crown, which adds exceedingly to the nobleness of its appearance. It has a long tail, diversified with several colors, and adorned with marks at equal distances, having the form of eyes. The golden glowing beauty of these marks, particularly when they reflect the bright beams of the sun, defy the pen of the poet and the pencil of the most accomplished artist. Its wings are mixed with the colors of azure and of gold. While it has the loveliest colors, it has the most disagreeable, harsh, and discordant voice. It is described by some as having the head of a serpent, train of an angel, and the voice of a demon.

Peacocks were first brought from India, where they are still found in the wild state in immense flocks, and also in the islands of Java and Ceylon. They were imported from India to Greece, and being the bird sacred to Juno, were preserved about the temple of this deity at Samos.

OF THE PHEASANT, as of all other domestic fowls, there are many varieties. There are white pheasants, horned pheasants,



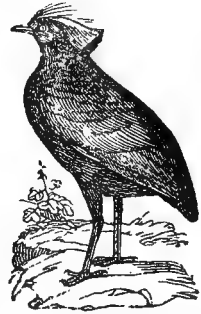
Horned Pheasant.

crested pheasants, spotted pheasants; but, of all others, the silver and golden pheasants of China are the most beautiful. It is a doubt whether the peacock itself can bear the comparison. However, the natives of China would not have us consider it as their most beau-

tiful bird, though covered all over with eyes, resembling in miniature those of the peacock. By their accounts, it is far exceeded by the fongwang, an imaginary bird, of which they give a most fantastic description. It is thus that the people of every country, though possessed of the greatest advantages, have still others that

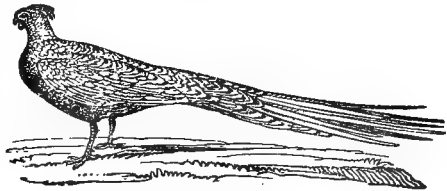
they would persuade strangers they enjoy, which have existence only in the imagination.

THE COMMON PHEASANT was originally brought from Georgia, and has completely naturalized itself in England. It is a hardy bird, and bears the cold months very well. Although it can be tamed, and will come to be fed with the poultry, yet an innate timidity prevents it from being thoroughly domesticated. Young pheasants that have been hatched under a hen, scamper off in terror if an unexpected intruder makes his appearance among them, although the remainder of the poultry remain perfectly unconcerned.

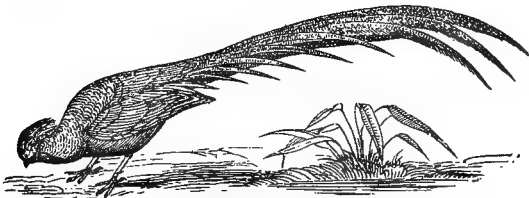


Crested Pheasant.

This bird loves to perch at night on trees, especially on the spreading branches of the larch. Poachers are so well aware of this habit, that they always visit the larches first, while on their marauding excursions. A few spruce-firs surrounded by dense and tall holly hedges form an excellent place of refuge for the birds, who can bid the poacher defiance from their stronghold.

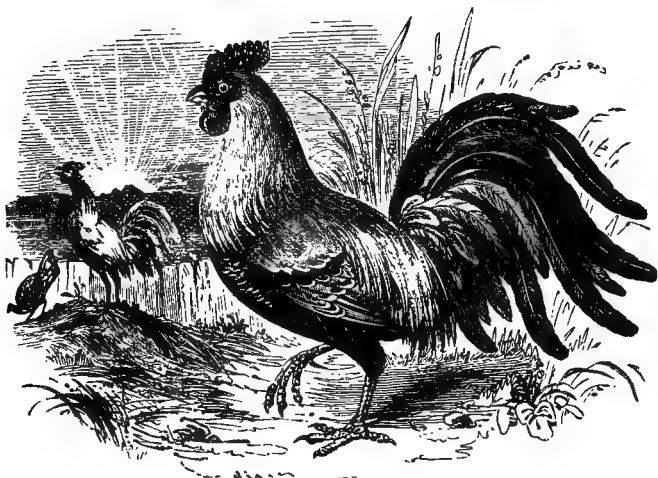


Silver Pheasant.



Golden Pheasant.

THE DOMESTIC FOWLS are too well known to need much description. There are many varieties, the most conspicuous of



The Cock.

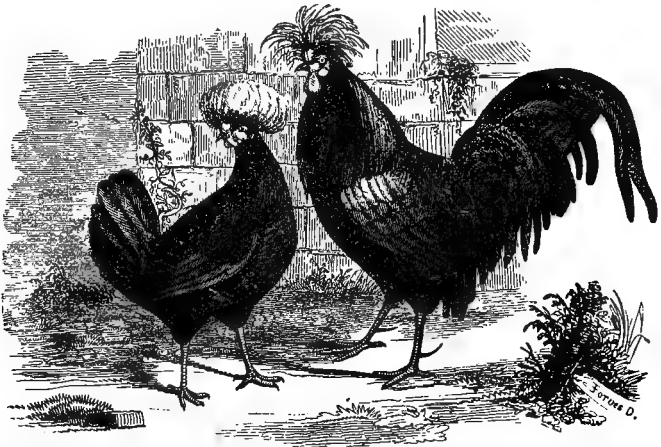
which are the Cochin-China, Crested, and Bantam. The Game Fowl was formerly in great request for the cruel sport of cock-fighting, an amusement which, though happily now almost extinct, was in great vogue but a few years since. The Java Fowl, of which the enormous Cochin-China bird is a variety, is supposed to be the origin of the barn-door fowl. The cock has been long celebrated for his warlike propensities, and his habit of greeting the approach of morn by his "shrill clarion."



Tailless Cock.

The Bantam is a very little bird indeed, but exceedingly courageous, and does not hesitate to attack a turkey or such large bird with most amusing pompousness of manner. Some Bantams have their legs thickly feathered down to the very toes. The

hackles or long neck feathers of this and the preceding bird are much used by anglers for making artificial flies

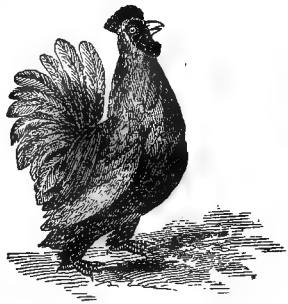


The Crested Fowl.

The celebrated Jungle Fowl of India belongs to this race, and is by many supposed to be the origin of our domestic game fowl. The Chinese, who are greatly addicted to the sport of cock-fighting, prefer this bird for their cruel amusement.

The Dorking Fowl is a large and delicate species. The chief peculiarity in this bird is the double hind toe, so that it has five toes instead of four.

THE TURKEY is an inhabitant of America, and appears to have been imported into Europe about the year 1600. Its habits in a state of domestication need



Bantam Cock.

no description, but when wild in its native woods are rather interesting. It is partly migratory in its habits, and before the settlement of the country, it moved annually from the parts



Hen and Chickens.

about Ohio, Kentucky, and Indiana, towards the Ohio and Mississippi. The march was usually performed on foot in large flocks, the birds seldom using their wings except when attacked,

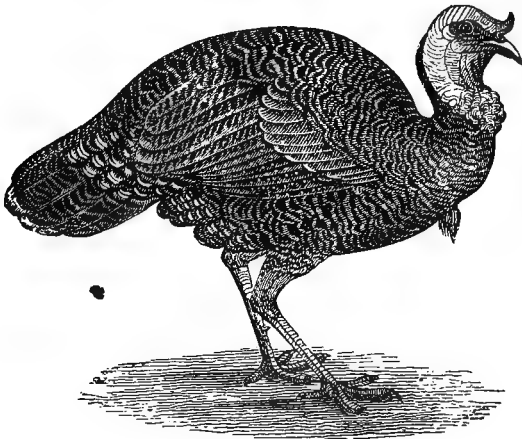
or in order to cross a river. The powerful birds can easily cross a river of a mile in breadth, but the weaker frequently fall into the water, and then paddle to shore with some rapidity. This migration was performed about the end of October. Audubon, in his splendid work on the American Ornithology, gives the following account of the ingenious way in which the turkeys escape the insidious attacks of their enemies.



Wild Turkey.

“These birds are guardians of each other, and the first who sees a hawk or eagle gives a note of alarm, on which all within hearing lie close to the ground. As

they usually roost in flocks, perched on the naked branches of trees, they are easily discovered by the large owls, and when attacked by these prowling birds, often escape by a somewhat remarkable manœuvre. The owl sails round the spot to select his prey, but notwithstanding the almost inaudible action of his pinions, the quick ear of one of the slumberers perceives the danger, which is immediately announced to the whole party by a *cluck*: thus alarmed, they rise on their legs, and watch the motions of the owl, who, darting like an arrow, would inevitably



Domestic Turkey.

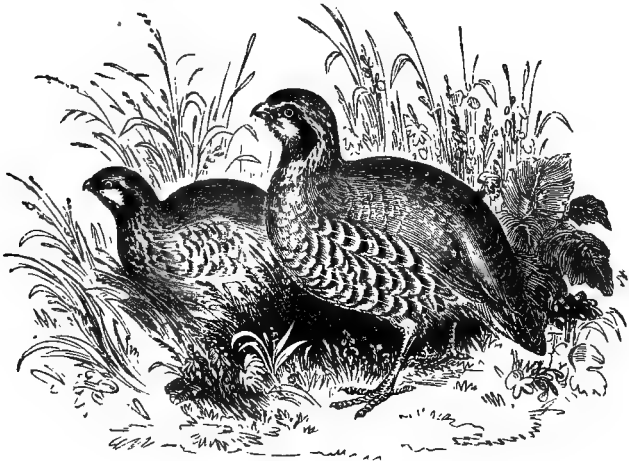
secure the individual at which he aimed, did not the latter suddenly drop his head, squat, and spread his tail over his back; the owl then glances over without inflicting any injury, at the very instant that the turkey suffers himself to fall headlong towards the earth, where he is secure from his dreaded enemy."

THE GUINEA FOWL, or *Pintado*, was originally brought from Africa, and was anciently confounded with the turkey. From its peculiar cry it has gained the name of "Come-back." In its wild state it is gregarious, assembling in large flocks in some marshy situation. At night the birds roost on the trees in com-

pany, like the turkey. It is of a restless, wandering disposition, which does not leave it in captivity, the bird frequently wandering for several miles from its home. Like the turkey, the Pintado lays its eggs in the closest concealment it can find. The eggs are rather smaller than those of the hen, the shell is very thick, and the color is a yellowish red, profusely spotted with dark brown.

This is the bird that was called Meleagris by the ancients. The sisters of Meleager were said to have been metamorphosed into birds, whose feathers were sprinkled with the tears shed for his death.

THE COMMON PARTRIDGE.—The bill is convex, strong, and short; the nostrils are covered above with a callous prominent rim;

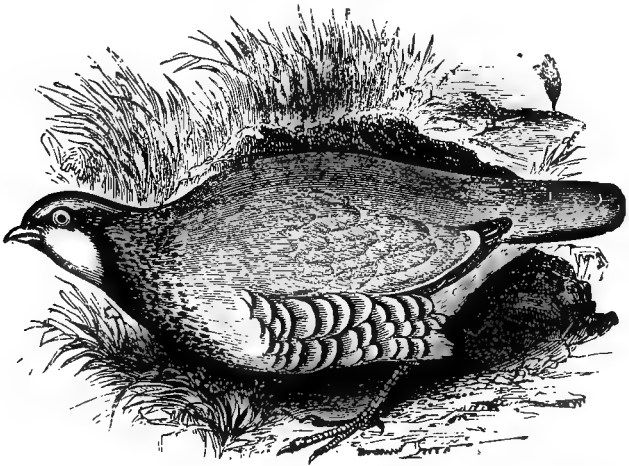


The Common Partridge.

the orbits are papillose; the feet naked; and most of the genus are furnished with spurs. Their flesh is good to eat; their flight is low and of a small compass; and they run almost as soon as hatched. Partridges are found almost in every country, and in every clime, from the torrid tracts under the equator, to the frozen regions of the pole. It is very striking how, by the kind arrange-

ments of the Creator, this interesting bird becomes assimilated and adapted to the climate of Greenland in winter. As soon as the icy winter sets in, it is clothed with a warm down beneath, and its outward feathers become as white as the snow among which it seeks its food. In warmer climates near the equator, they are long-legged, much swifter of feet, and choose for their residence the highest rocks and precipices. It is said, that on the lofty Alps the partridges are white, and their feet protected by hair.

THE RED-LEGGED PARTRIDGE.—The leading characters of the Red-legged Partridge are the same as those of the Common Partridge. The *perdix rubra*, the common *Red-legged Partridge*,

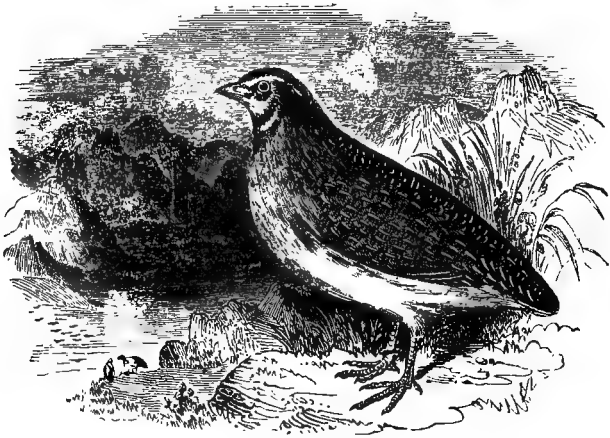


The Red-legged Partridge.

is abundant in France and Italy, rare in Switzerland, and still more seldom found in Holland and Germany. It is met with in Japan, identical in form and color of plumage. The Red-legged Partridge is known by the name of Greek Partridge, or *bartavella*; and it is the opinion of most judicious writers, that this is the bird to which allusion is made in the Holy Scriptures. This bird is introduced into the preserves in England. In the coun-

tries of which it is a native, it keeps ordinarily among rocks, while it has the instinct to descend into the plains to make its nest, in order that the young, when they are hatched, may find a sufficiency of subsistence. Red-legged partridges are most determined runners, and few birds are so able to puzzle a well-bred and a well-broken pointer.

QUAILS are found nearly in every country of Europe, also in Asia, and are very common in China. The males are much



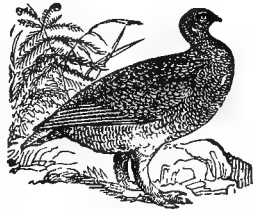
The Quail.

given to fighting, and were anciently exhibited in regular combats both by the Greeks and Romans. The practice of quail-fighting is still cherished in China, Sumatra, and some districts of Italy. Quails are capable of receiving a considerable quantity of fat: their meat is delicate, pleasant to the taste, and therefore they are killed in great numbers for the table. They hatch four times a year, from fifteen to twenty in number. Sometimes they undertake extensive migrations in immense flocks, passing in autumn from the colder to the warmer regions. With wind and weather in their favor, they have been known to perform a flight of fifty leagues across the Black Sea in one night. An hundred thousand

of them have been caught in Italy each day for a whole month, within the space of five miles:

THE BLACK GROUSE, or *Black Cock*, is still found on the moors of Scotland and some parts of England, and with the red grouse, tempts innumerable sportsmen annually to spend their leisure months on the moors.

THE RED GROUSE has never been found wild on the Continent of Europe, but seems to confine itself exclusively to the heaths of Scotland, Wales, and Ireland. In these places it is very numerous, associating in flocks or "packs," and, together with the black grouse, is eagerly pursued by sportsmen, who are frequently baffled by the shy and wary habits of the birds. The nest of the Red Grouse is formed of heath and grass carelessly heaped together on the ground under the shelter of some low shrub. The young are fully fledged by August.



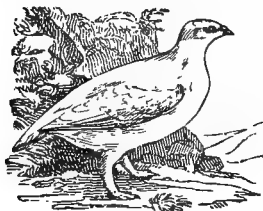
Red Grouse.

THE BRUSH TURKEY is principally found in the thick brushwood of New South Wales. Mr. Gould, who first brought it before the public, gives this curious account of their nests:—"The mode in which the materials composing these mounds are accumulated is equally singular, the bird never using its bill, but always grasping a quantity in its foot, throwing it backwards to one common centre, and thus clearing the surface of the ground for a considerable distance so completely that scarcely a leaf or a blade of grass is left. The heap being accumulated, and time allowed for a sufficient heat to be engendered, the eggs are deposited, not side by side as is ordinarily the case, but planted at the distance of nine or twelve inches from each other, and buried at nearly an arm's depth, perfectly upright, with the large end upwards. They are covered up as they are laid, and allowed to remain until hatched. I am credibly informed, both by natives and settlers living near their haunts, that it is not an unusual event to obtain nearly a bushel of eggs at one time from a single

heap; and as they are delicious eating, they are eagerly sought after."

When the Brush Turkey is disturbed, it either runs through the tangled underwood with singular rapidity, or springs upon a low branch of some tree, and reaches the summit by a succession of leaps from branch to branch. This latter peculiarity renders it an easy prey to the sportsman.

THE PTARMIGAN.—The legs and feet of the Ptarmigans are thickly covered with hair-like feathers, reaching as far as the claws. Their plumage bears a singular analogy to the fur of the ermine and some other quadrupeds, as it changes in winter from a rich tortoise-shell color to a pure white. The common Ptarmigan inhabits the northern parts of Europe and America, and is also found in the north of Scotland, principally among the mountains. The color of the bird is so similar to that of the mossy and lichen-covered rock



Ptarmigan.

among which it dwells, that a whole covey easily eludes an unpractised eye.

Enormous numbers of Ptarmigans are annually imported from the north of Europe, especially from Norway and Sweden, to the London market. One poulterer has purchased fifteen thousand of these birds; and twenty-four thousand have been exported in one ship from one place.

Like that of the grouse, the Ptarmigan's nest is a loosely-constructed heap of twigs and grass, and contains from ten to fourteen eggs, of a reddish white spotted with brown.

ORDER V. — RUNNERS.

To this order belong those birds with very long legs, which, though they have strong wings, yet are incapable of flight, though they run with great rapidity.

THE OSTRICH is an inhabitant of Africa and Arabia. Its beak is of a conical shape, its legs long and naked. It has only

two toes on a foot, both turned forward ; and its wings, being short, rather serve for sails than for flight, so that the movement of this bird at full speed has more the appearance of *sailing* than *running*. It is the tallest of birds, being seven or eight feet high when it stands erect. Its neck is about four or five spans in length. Assisted by its wings the swiftest horse is unable to overtake it.

The ostrich is peculiarly valuable on account of its feathers, which are used as ornaments for hats, beds, and canopies. Of the purest white, they are used by those who frequent the courts of princes ; and dyed black as jet, they are employed to decorate hearses and horses in the funeral processions of the wealthy and great. Its foolishness is proverbial, being most easily deceived. When it hides its head in a thicket, though the rest of its body is completely exposed, it imagines all is safe. It is said, that if a man dress himself in an ostrich's skin and hold



The Ostrich.

out seeds to it, it is easily taken. The noise of the female ostrich is most hideous and doleful. They lay their eggs in the sand to be hatched in the sun. This is wisely ordered by Providence, for if they sat upon them, such is their weight, that they would break them to pieces. It is said, that the male and female watch the eggs by turns. If they chance to be driven away, such is their stupidity, that they seldom find them again.

This animal is singularly voracious. Leather, grass, hair, stones, metals, it will greedily and indiscriminately devour.

THE CASSOWARY is a native of the eastern parts of Asia. Like the ostrich, it cannot fly, but runs with great swiftness, and if attacked by dogs kicks with extreme force and rapidity. The feathers of this bird are remarkable for being composed of two long, thread-like feathers, sprouting from the same root. The wing feathers are round, black, and strong, and resemble the quills of the porcupine. At the end of the last joint of the wing is a sort of claw or spur.

The food of the bird consists of vegetable substances, and it will frequently swallow a tolerably large apple entire, trusting to the pebbles, etc., in its stomach, to bruise it.

THE EMU is a native of New Holland, and nearly equals the ostrich in bulk, its height being between five and six feet. Its feathers lie loosely on the body, and its wings are small and hardly to be distinguished. The skin of the Emu furnishes a bright and clear oil, on which account it is eagerly sought after. Mr. Bennet gives the following account of the habits of this bird :

“In its manners the Emu bears a close resemblance to the ostrich. Its food appears to be wholly vegetable, consisting chiefly of fruits, roots, and herbage; and it is, consequently, notwithstanding its great strength, perfectly inoffensive. The length of its legs and the muscularity of its thighs enable it to run with great swiftness; and as it is exceedingly shy, it is not easily overtaken or brought within gun-shot. Captain Currie states that it affords excellent coursing, equalling if not surpassing the same sport with the hare in England; but Mr. Cunningham says that dogs will seldom attack it, both on account of some peculiar odor in its flesh which they dislike, and because the injuries inflicted upon them by striking out with its feet are frequently very severe. The settlers even assert that the Emu will break the small bone of a man’s leg by this sort of kick; to avoid which, the well-trained dogs run up abreast, and make a sudden spring at their neck, whereby they are quickly dispatched.

“Its flesh has been compared to coarse beef, which it resembles both in appearance and taste. There is but little fit for culinary use upon any part of the Emu except the hind quarters.”

The voice of the Emu is a kind of low booming sound. The eggs are six or seven in number, of a dark green color, and are much esteemed by the natives as food. When the natives take an Emu, they break its wings, a curious custom, of no perceptible utility. Young men and boys are not permitted to eat the flesh of this bird.

THE APTERYX.—This extraordinary bird, whose name is derived from the apparent absence of wings, those members being merely rudimentary, inhabits Australia and the islands of New Zealand. It conceals itself among the densest fern, and when hunted by dogs, it hastens to seek a refuge among rocks and in the chambers which it excavates in the earth. In these chambers its nest is made and the eggs laid. The natives hunt it with great eagerness, as the skin is used for the dresses of chiefs, who are so tenacious of them that they can hardly be persuaded to part with a single skin. The feathers are employed to make artificial flies. When attacked it defends itself by rapid and vigorous strokes with its powerful feet.

THE DODO.—This singular bird, which is supposed to be extinct, was discovered at the Mauritius by the earlier voyagers. For many years their accounts of the Dodars were supposed to be mere flights of fancy. Lately, however, the discovery of several relics of this bird in various countries has set the question at rest. Not so the question of the proper position of the bird. Some think it belongs to the pigeons, and some to the ostriches. In the Ashmolean Museum at Oxford, England, are a head and foot of the Dodo, sole remnants of a perfect specimen known to have existed in 1700; and in the same place, in the year 1847, during the meeting of the British Association, were gathered together the whole of the existing remains from every country.



The Dodo.

CHAPTER XII.

DIVISION I.—VERTEBRATES.

CLASS II.—BIRDS.

WADERS AND SWIMMERS.

ORDER VI.—WADERS.

THE Waders are distinguished by their very long and naked legs, which permit them to wade to a considerable depth in the water without wetting their feathers. The length of their neck and beak corresponds to that of their legs, and they are consequently able to search in the sand and mud at the bottom of the water for their food, which consists of fishes, reptiles, and worms.

THE GREAT BUSTARD, an English representative of the *Otidæ*, is now scarcely ever seen in England, although formerly it was tolerably common. It runs with great swiftness, and will never rise on the wing until forced, so that instances have been



The Great Bustard.

known of bustards being captured by greyhounds. It is exceedingly wary, and can hardly be approached within gun-shot, except by adopting some disguise, as a laborer with the gun in his wheelbarrow, or by driving a cart or a carriage by the spot where it is feeding.

The male Bustard possesses a membranous pouch on the fore part of the neck, capable of holding six or seven pints of water. There is an opening to this pouch under the tongue, and its use is possibly, like that of the pelican, to carry water for the use of the young, but this is not ascertained. The length of the bird is rather more than three

fect. Its nest is a loose heap of straws on the ground, and contains two pale brown eggs, spotted with brown, rather larger than those of the turkey.

THE PLOVERS are known by their long legs, short toes, and long, powerful wings. The Stone Curlew, or Norfolk Plover, is common in England, and is to be found on open plains. White gives an accurate description of the bird in his Natural History of Selborne. "The history of the Stone Curlew is as follows. It lays its eggs, usually two, never more than three, on the bare ground, without any nest in the field, so that the countryman in stirring his fallows often destroys them. The young run immediately from the egg, like partridges, etc., and are withdrawn to some flinty field by the dam, where they skulk among the stones, which are their best security; for their feathers are so exactly of the color of our grey spotted flints, that the most exact observer, unless he catches the eye of the young bird, may be eluded. The eggs are short and round, of a dirty white, spotted with dark bloody blotches."



Long-legged Plover.

THE CRANE is a large bird, about five feet in length. The bill is more than four inches long. The feathers are ash-colored, the forehead is black, and on the upper part of the neck there is a space of about two inches, ash-colored and bare. At the tip of each wing there is a beautiful tuft of loose feathers, which the animal can erect at pleasure. The legs are long and stout, with a large naked space above the knee, and their toes are long. There is a peculiarity about their windpipe. It runs considerably down their breast, then returns at the same passage, and descends to the lungs.

Cranes inhabit Europe and Asia; and in autumn they regularly migrate in flocks to the southern parts of Asia and Africa. In Sweden and Poland they are so numerous as to become injurious to the fields of wheat. The female makes her nest among

rushes, on alder-bushes, and occasionally on the roofs of detached houses. She generally lays two eggs of a green ash-color, spotted with brown.

Cranes live chiefly on slugs, worms, frogs, grain, and herbs which grow in the fields, or in marshy situations. In winter they resort in crowds to Egypt and the warmer parts of India. In



The Crane.

in their expeditions they fly exceedingly elevated in the air, forming an angular shape. When the wind freshens, or when an eagle approaches, they assume the form of a circle. They take their journeys chiefly in the night, and as they advance, utter loud and discordant screams.

THE HERON.—The *ardea major*, or Common Heron, has a black crest hanging down from the back part of the head, the

body is variegated with black and white, and below bluish; the bill of a deep yellow; the iris yellow; the skin of the eye naked, and of a bluish purple; the feet brown, but yellowish towards the feathered part; the beak and legs are long; their under and upper



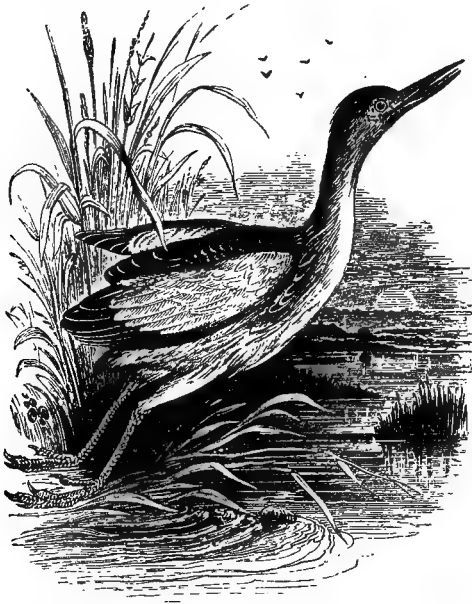
The Heron.

chaps are alike in length; and they have four long, connected toes on each foot. It is a tall bird, very light in proportion to its size; in weight about three pounds and a half. The length is three feet two inches, and the breadth from tip to tip of extended wing, five feet four inches.

The Heron is a bird found almost in every part of the world, but stationary in Britain. At the season of reproduction they congregate in great numbers at their stations, or heronries, for which the loftiest trees are selected. More than eighty nests have

been counted on one tree. The nest, which is large and flat, is built of sticks, lined with wool, or other soft materials, on which are deposited four or five bluish-green, lustreless eggs.

THE BITTERN.—This bird is about the size of a heron. The crown of its head is black; and there is a black spot near each angle of the mouth. Its neck is covered with long feathers, which it can erect at pleasure. The legs, compared with those of the same family, rather short. The back is beautifully speckled with black, brown, and grey; the body beneath whitish

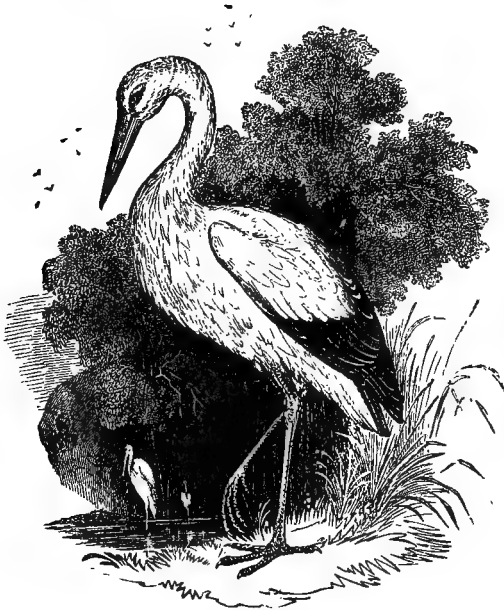


The Bittern.

The food of the Bittern chiefly consists of frogs and other aquatic animals. Its nest is rude, and generally formed of reeds, sticks, etc., placed on some dry clump in a reedy marsh, or well-clothed rushy moor, and containing four or five pale green eggs.

This bird prevails in Europe, and is an inhabitant of the

fen countries. It skulks among the reeds and sedges. Its usual attitude is, having the neck and head erect, and the beak pointed directly upwards. It will allow persons to approach it very closely without rising. When wounded and unable to escape, it has been known to strike boys and sportsmen. It generally flies about in the dusk of the evening, and it rises in a spiral ascent till it is out of sight. It makes a strange noise when it is among the reeds and a very different sound at night when it rises upon the wing Willoughby writes, "This, without doubt, is that bird our common people call the night-raven, and have such a dread of, imagining that its cry portends no less than their death, or the death of some of their near relations."



The Stork.

THE STORK is extensively found throughout Europe, Asia and Africa. In Holland storks are very abundant, and are encou-

raged by the Dutch to build in their towns. Among the ruins of Persepolis they are very common, scarcely one pillar being without a stork's nest at the summit. In Holland a kind of false chimney is built by the inhabitants for these birds to make their nests in. When the Stork cannot find a building on which to make its nest, it chooses the flat spreading branches of a cedar or pine, and there collects a large mass of sticks and twigs, on which it lays from three to five whitish eggs. When disturbed, the birds make a great clattering with their bills. The draining of the morasses seems to have driven the Stork completely out of England, where it was formerly tolerably common. The food of this bird consists of rats, mice, frogs, etc.

THE ADJUTANT.—This very remarkable bird is a native of various parts of India, and must not be confounded with the Marabou, which belongs to the same genus, but lives in the African tropics.



The Adjutant.

15. The Adjutant is one of the largest birds in the world, standing five feet in height, and measuring seven feet and a half from the tip of the bill to the claws, while its expanse of wing is rather above fourteen feet. On the front of the breast there hangs a pouch of skin, into which the bird sometimes appears to withdraw its neck altogether, looking on such occasions as if it

had no neck at all. Its bill, as will be seen from the cut, is enormously large, and capable of receiving prey of considerable magnitude, inasmuch as in the crop of one of these birds were found a land tortoise, ten inches in length, and a large male black cat, which the Adjutant had snapped up entire. It has also been known to swallow entire a small leg of mutton, a hare, and a small fox, so that there is no reason to complain that it does not make use of the "terrors of its beak." But its beak only affords terror

to those who are afraid of it, for the Adjutant is an arrant coward, and will not venture even to oppose a hen when she is defending her chickens, which the Adjutant has been trying to catch unobserved.

THE IBIS. — The bill of the *tantalus*, or *ibis*, is very long and straight, without a nasal pass, a little inflected at the tip,



The Ibis.

which is curved; the face naked; the legs very long; and the lateral toes united by a broad, scalloped membrane. There are five species.

The *ibis religiosa*, or *tantalus Ethiopicus*, and also known as the *sacred ibis*, is common in Ethiopia, and in the whole of Lower Egypt during part of the year. Part of the head and neck is naked, and the general plumage is diversified with glossy black

and white. There is a marked difference betwixt the young and the old birds: the former having the crown of the head and the nape furnished with long, pendent plumes.

This bird sometimes lives in a solitary state, and sometimes in small bands of eight or ten. In its flight it is vigorous and lofty: its mode of flight is very peculiar: when on wing it stretches out its neck and feet horizontally, like most of the same genus, uttering from time to time a very hoarse, disagreeable scream. They are often seen in groups, remaining together for hours, on ground recently abandoned by the water, very busily employed in exploring the mud with their bill. They do not hop and run like the curlews, but walk slowly and deliberately, step by step. Where they breed is not ascertained. They arrive in Egypt when the Nile begins to swell, and leave when the waters subside.

THE WOODCOCK is a native of the northern parts of Europe and Asia, and is common in this country. The Woodcock frequents dense thickets during the day, but at night it leaves these retreats, and visits the swamps and flooded meadows, where it finds a sufficiency of worms and insects.

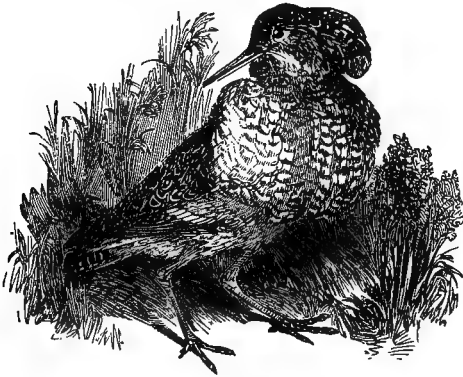
The nest of this bird is a loose mass of grass and leaves, gathered together in some sheltered depression. The eggs are four in number, of a yellowish brown, blotched with dark brown and grey.



The Snipe.

THE SNIPE is too well known to need description. In its habits it much resembles the woodcock. Its flight is very singular, rendering it a difficult mark. The Jack Snipe confines itself to one spot, and cannot be induced to leave it even when fired upon. Its flight is fully as perplexing as that of the Common Snipe. Stanley, in his History of Birds, mentions "a gentleman, a very bad shot, who having at length succeeded in killing a Jack Snipe, deeply lamented the loss of a bird which, as he was always sure of finding it in the same place, had afforded him constant amusement during a whole winter."

THE RUFF is celebrated for its pugnacious habits and the singular change of its plumage at certain seasons of the year.

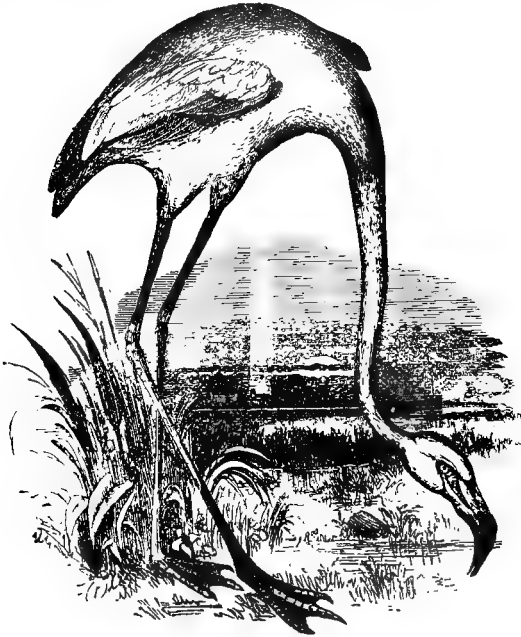


The Ruff.

Towards the breeding season a beautiful frill of long feathers is formed round the neck. It is a singular fact, that in hardly any two of these birds is the frill of the same color; and more remarkable, that the frill of the same bird is of different colors at different seasons. At the same time that the frill forms, the male birds choose each for themselves a small spot, on which no other bird is permitted to intrude without a severe battle taking place. The females, called Reeves, now arrive, and their approach is the signal for a general melee; and the ground is soon denuded of grass by the constant battles.

The nest of the Reeve is merely a slight depression in a tuft of grass. The eggs are four in number, of a greenish white, blotched with reddish brown.

THE FLAMINGO resembles the heron in shape, excepting the bill, which, in its form, is very peculiar. It is two years before it reaches its perfect color, which is wholly red, except the quill-feathers, which are black. The name flamingo is given from



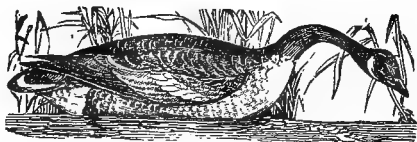
The Flamingo.

its red and flaming appearance. The weight, when full grown, is that of a duck; and when it stands erect, it is five feet high. As it is aquatic, its feet are webbed; Providence uniformly adapting creatures to their nature and mode of life. The flesh is delicate, and much resembles that of a partridge. The luxurious ancient gormandizing Romans knew the excellence of this bird for the purposes of the table, and held it in great estimation. What is

very curious, these birds make their nests on hillocks, a little elevated above shallow water, on which they sit with their legs extended downwards, like a man sitting on a stool. They prevail on the coasts of Cuba, and the Bahama Islands, in the West Indies. They only frequent salt water. Its mode of eating is very singular: by the particular shape of its bill, in eating, it twists its neck from side to side, and makes the upper mandible touch the ground. They are very stupid, and will not even rise at the report of a gun. Besides, it is no warning to the survivors to see their slain associates, or offspring, lying dead at their feet. If a fowler keeps himself out of sight, he may kill as many as he pleases with the utmost ease. Their food chiefly consists of small fish, or the spawn of fishes, and also water-insects, which they diligently search after by plunging in their bill and part of their head. While feeding in groups, one of them stands sentinel, and when he gives the alarm, the whole flock takes wing. When this bird takes rest and sleeps it stands on one foot, the other being drawn up close to the body, with the head placed under the wing on that side of the body on which it stands, and thus enabling it to preserve its equilibrium.

ORDER VII. — SWIMMERS.

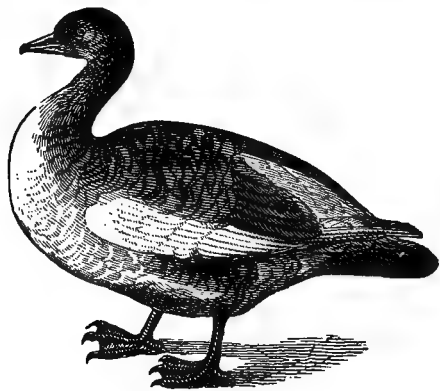
The birds of this order have their toes connected together by a web or membrane, which fits them for being used as oars; and, indeed, their whole structure adapts them for swimming—their legs being situated far back upon their bodies, their feathers thick, smooth, and oily, and their skin beneath covered by a layer of close down, which effectually prevents them from the contact of water. Their necks are of considerable length, enabling them, while swimming upon the surface of the water, to plunge their heads down to the bottom in search of food.



Bernicle Goose.

THE BERNICLE GOOSE inhabits the northern parts of Europe and America, but during the winter it resorts to the English shores in great numbers. It is an extremely shy bird, and cannot be approached without the greatest caution and skill. Of the origin of this bird most absurd tales have been told.

THE TAME GOOSE is so well known, as to need no specific description. They are raised in large numbers throughout the



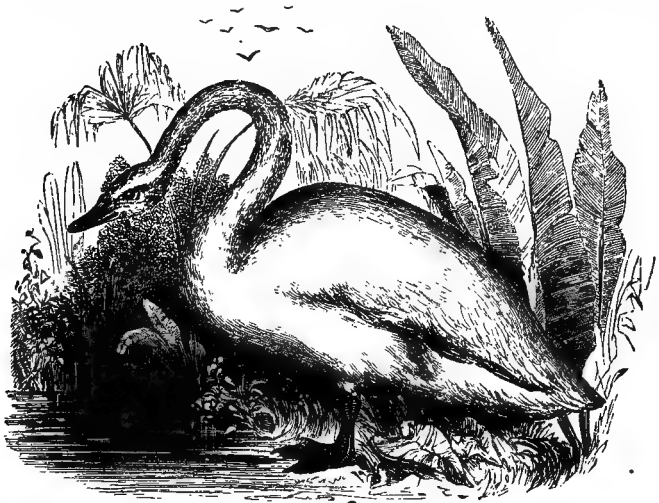
Domestic Goose.

United States, and almost every farm-house has its stock, which are subjected annually to the operation of plucking, to supply the demand for live-geese feathers.

THE WHISTLING or HOOPING SWAN inhabits Europe, Asia, and America. They prefer the northern regions of the globe; and in hard winters they appear in small flocks of eight or ten on the coast of France, England, and other countries. On the approach of spring they quit their southern stations, and again retire northward to breed. A few, however, drop short by the way, and perform that office in the Hebrides, the Shetland, or the Orkney Islands. In the two latter, and in the Faroe Islands, large flocks of them annually arrive in October, and pass the winter about the numerous fresh water lakes. In their migrations they fly very high in the air, and in such compact array, that the

bill of the one seems to touch the tail of the other. The Wild Swan has been styled "the peaceful monarch of the lake."

Its bill is semi-cylindrical and black; cere, yellow; body, white; head and nape, slightly tinted with yellowish streaks; iris,

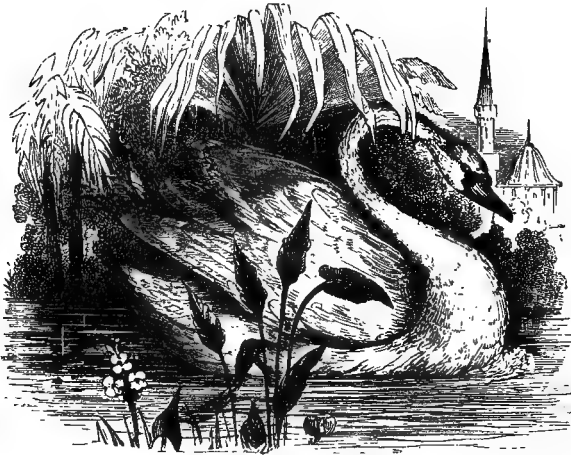


The Whistling Swan.

brown; legs and feet, black. The female is somewhat smaller than the male, and the young are grey. The length of the full-grown male is from four feet five to four feet nine inches; the extent of wing six feet three inches; and the weight from fifteen to twenty-five pounds.

THE TAME or MUTE SWAN.—The bill of the Tame Swan is red; the fleshy tubercle and the base and edges of the mandibles black, and the body white. In length, size, and weight, it differs very little from the Whistling or Hooping Swan already described. Calmet's account of this bird is striking and interesting: "The Swan is a large water-fowl, that has a long neck, and is very white, excepting when it is young. Its legs and feet are black. Its bill is like that of a goose, but somewhat rounder,"

and a little hooked at the lower end of it. The two sides below its eyes are black and shining like ebony. Swans use their wings like sails, which catch the wind, so that they are driven along in the water." This is a peculiarity connected with this water-bird, and they who have seen its snow-white wings expanded, with the light feathers fluttering in the breeze as it moves rapidly along the glassy surface of the crystal lake, cannot easily forget the impression produced by a sight so noble, imposing, and animating.



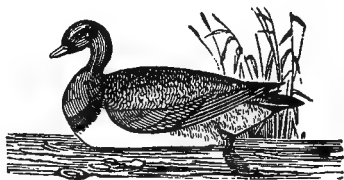
The Tame or Mute Swan.

Calmet goes on to observe: "Swans feed upon herbs and some sort of grain, like a goose; and some are said to have lived three hundred years. The Swan is reckoned by Moses among the unclean creatures; but it was consecrated to Apollo, the god of music, because it was said to sing melodiously when near expiring; a tradition generally received, but fabulous."

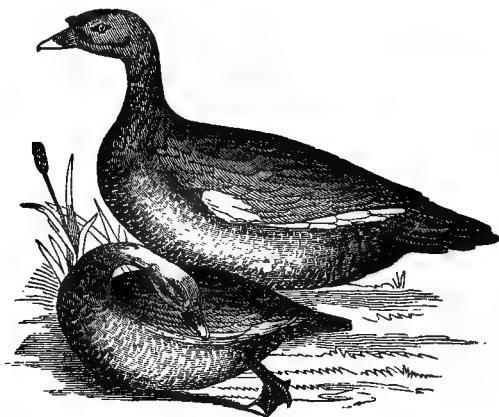
THE MALLARD or WILD DUCK is the origin of our domestic bird, and is widely spread over the northern parts of Europe, Asia, and America. In the winter it migrates in countless flocks, many reaching this country. Incredible numbers of these

birds are taken in a very ingenious trap, called a decoy. It is a perfect edifice of poles and nets, and is built in the form of a tube, very wide at the mouth, and very narrow at the extremity. The ducks are induced to enter the "pipe" by the antics of a dog, and by some hemp-seed previously strewn on the water. They are then driven onwards to the smaller end, where they are caught and killed.

THE TAME DUCK is so well known as to need no description. The manner in which it fights the cock is highly amusing, and but little known. It frequently happens while the fowls are being fed, that the duck runs among them, and by his larger beak, gobbles up an undue share of the provisions. This the cock resents by giving him a



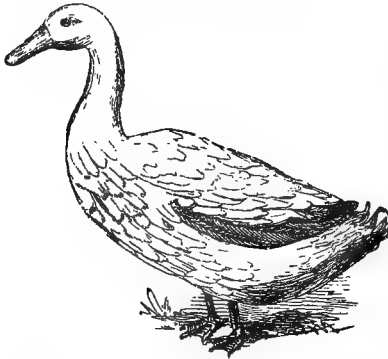
Wild Duck.



Muscovy Duck.

peck. The duck takes no notice, but gets behind the cock, deals him a hard peck, and looks innocent. The cock jumps round, but sees nothing. Presently another hard peck comes, and he is very angry. A third peck — but this time the cock sees his enemy,

and rushes at him furiously. Down flops the duck on the ground, and lets the cock pass over him. After running over him once or



Common Duck.

twice, and then jumping on him, the cock is persuaded that his enemy is quite dead, and walks off on the tips of his toes. Presently the duck first opens one eye and then the other, gets up and quietly pecks the cock again. The same manoeuvres are repeated, until at last the duck wins, like Fabius, by

delay, and drives his antagonist fairly off the field.

THE EIDER DUCK.—The Eider Duck furnishes the celebrated down in such request for pillows and beds. It is a singular fact, that the down must be plucked from the bird when living, as it seems to lose its peculiar elasticity and softness when taken from the bird after its death. The down is plucked by the bird itself from its breast, for the purpose of lining its nest, which is then repeatedly robbed until the Eider is reduced to laying its eggs on the down from the male bird. These eggs are generally permitted to be hatched, or the birds would forsake the spot, and never return again. So completely does the poor bird denude itself that one female will furnish half a pound's weight of down.

THE ALCIDÆ or AUKS are never seen inland, but exclusively inhabit the sea-shores. In this family the wings are small, and in some genera useless for flight. The feet are placed so far back that the birds, when sitting, assume an erect attitude.

THE GREAT AUK is an inhabitant of the Arctic circle, but is sometimes seen in the northern islands of Scotland. The wings of this bird are incapable of raising it into the air, but serve admirably as paddles when diving. It breeds principally on the shores of Iceland and Spitzbergen, laying one large egg on a cleft

of a high rock. The eggs are extremely scarce, and fetch a very high price among collectors, a circumstance which has caused some most ingenious impositions. The length of the bird is nearly three feet.

THE CAPE PENGUIN is very common at the Cape of Good Hope and the Falkland Islands. From the extraordinary sound it produces while on shore, it is called the Jackass Penguin. Darwin gives the following interesting account of this bird: "In diving, its little plumeless wings are used as fins, but on the land, *as front legs*. When crawling (it may be said on four legs) through the tussocks, or on the side of a grassy cliff, it moved so very quickly that it might readily have been mistaken for a quadruped. When at sea and fishing, it comes to the surface, for the purpose of breathing, with such a spring, and dives again so instantaneously, that I defy any one at first sight to be sure that it is not a fish leaping for sport."

THE STORMY PETREL is, under the name of Mother Carey's chicken, the terror of the sailor, who always considers the bird as the precursor of a storm. It is the smallest of the web-footed birds. Few storms are violent enough to keep this curious little bird from wandering over the waves in search of the food that the disturbed water casts to the surface. Like the Fulmar, the Stormy Petrel is so exceedingly oily in texture, that the inhabitants of the Feroe Islands draw a wick through its body and use it as a lamp. Wilson gives the following account of its habits while following a ship under sail:

"It is indeed an interesting sight to observe these little birds in a gale, coursing over the waves, down the declivities, up the ascents of the foaming surf that threatens to bend over their heads; sweeping along the hollow troughs of the sea, as in a sheltered valley, and again mounting with the rising billow, and just above its surface, occasionally dropping its *æet*, which, striking the water, throws it up again with additional force; sometimes leaping, with both legs parallel, on the surface of the roughest waves for several yards at a time. Meanwhile it continues coursing from side to side of the ship's wake, making excursions far

and wide, to the right and to the left, now a great way ahead, and now shooting astern for several hundred yards, returning again to the ship as if she were all the time stationary, though perhaps running at the rate of ten knots an hour! But the most singular peculiarity of this bird is its faculty of standing and even running on the surface of the water, which it performs with apparent facility. When any greasy matter is thrown overboard, these birds instantly collect round it, and facing to windward, with their long wings expanded and their webbed feet patting the water, the lightness of their bodies and the action of the wind on their wings enable them to do this with ease. In calm weather they perform the same manœuvre by keeping their wings just so much in action as to prevent their feet from sinking below the surface.

THE WANDERING ALBATROS, the largest of the genus, is a well-known bird in the southern seas, following ships for many miles in hopes of obtaining the refuse thrown overboard. So voracious is the Albatros, that it will swallow entire a fish of four or five pounds' weight. The flight of this bird is peculiarly majestic. Its extreme length of wing prevents it from rising at once from the ground, but when once launched into the air, it seems to float and direct its course without effort. Gould, in describing the flight of this bird, says :

“The powers of flight of the Wandering Albatros are much greater than those of any other bird that has come under my observation. Although during calm or moderate weather it sometimes rests on the surface of the water, it is almost constantly on the wing, and is equally at ease while passing over the glassy surface during the stillest calm, or sweeping with arrow-like swiftness before the most furious gale; and the way in which it just tops the raging billows, and sweeps between the gulfy waves, has a hundred times called forth my wonder and admiration. Although a vessel running before the wind frequently sails more than two hundred miles in the twenty-four hours, and that for days together, still the Albatros has not the slightest difficulty in keeping up with the ship, but also performs circles of many miles in extent,

returning again to hunt up the wake of the vessel for any substances thrown overboard.”

THE TERNS, or *Sea Swallows*, are possessed of great power and endurance of flight, their long forked tails and pointed wings indicating strength and swiftness.

The Common Tern is found in plenty along the southern shores of Europe, and many parts of Asia and Africa. It is frequently seen on the southern shores of England, and has been found in North America. It preys on fish, which it snatches from the surface with unerring aim, as it skims over the waves with astonishing velocity.



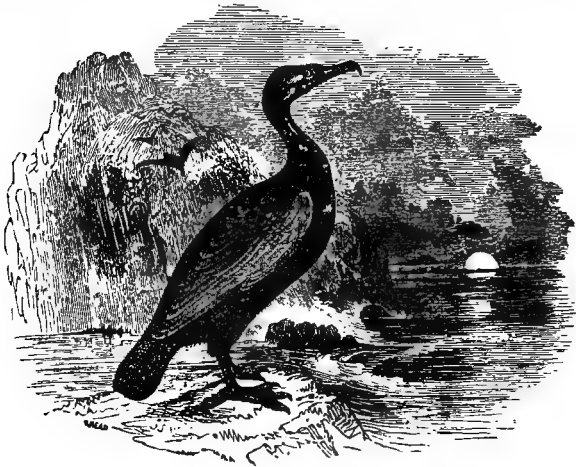
The Tern.

THE GANNET, or *Solan Goose*, feeds almost entirely on herrings, which it seizes by plunging with extraordinary force from a considerable height. This method of procuring food has led to an ingenious device for capturing the bird. A herring is fastened to a board, and suffered to float on the surface of the water. The Gannet, seeing the fish apparently sporting on the surface, plunges at it with such force that it is instantly killed by the blow. A Gannet was once taken when the board was sunk to the depth of six feet, yet even at that depth the bird's neck was dislocated, and its bill firmly stuck into the wood. The length of the Gannet is about two feet eight inches.

The Booby is a species of Gannet. Sailors have given it this rather inelegant name on account of the stupidity it displays in suffering itself to be knocked down with a stick, or even taken up by hand.

THE CORMORANT is a large sea-bird; it is of the order of the *anser*es, or goose kind, and called by naturalists *corvus aquaticus*, or sea-raven. Among the Jews this bird was unclean: it is in length about three feet four inches, and about four feet two inches from tip to tip of its extended wings; the bill is about five inches long; the base of the lower mandible is covered with a naked, yellowish skin, which extends under the throat, and forms

a kind of pouch or bag. As to its color, its back is of a deep dusky brown, with a mixture of a greenish gloss; the feathers of its belly are white; its tail is in length about a hand-breadth and a half; its legs are black, thick, and flattish, and its toes are joined together by a membrane, in the manner of a duck; it builds its nests on trees or in rocks; it lives on fish, and with great violence

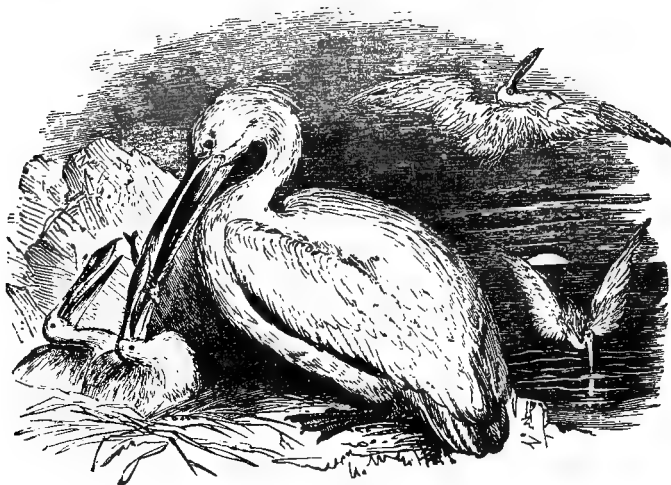


The Cormorant.

dart on them in the water; its appetite is most voracious, while there is probably no carnivorous bird so disagreeable in its smell, or so hateful and disgusting in its habits as this. Is not this unclean and hateful bird a just figure of the vile sensualist, who is bent on the gratification of his carnal appetites and lusts?

THE COMMON PELICAN is called *onocrotalus*, and is all over of a greyish white. The bill is of great length and hooked at the end, and has under it a loose flexible membrane reaching to the throat, which forms a bag capable of holding a large quantity of food for feeding its young. Like the duck, or goose, its feet are webbed, all the toes being joined by the membrane, thus fitting it for swimming. The bones of this bird are solid, and not hollow

like the bones of other birds; and are also pellucid, or clear. It is said that the bag under their throat is so capable of enlargement, as sufficient to hold two human heads. The Pelican is nearly twice the size of a swan. Pelicans haunt desert places



The Pelican.

where there are rivers, or pools, and marshy places: hence, the Psalmist compares himself to a pelican of the wilderness. The voice of this bird is harsh and disagreeable, resembling the sounds uttered by a man in great suffering and distress.

THE FRIGATE PELICAN, or *Man-of-War Bird*, is usually found between the tropics. Although when stripped of its feathers it is hardly longer than a pigeon, yet no man can touch at the same time the tips of its extended wings. The long wing bones are exceedingly light, and the whole apparatus of air-cells is extremely developed, so that its real weight is very trifling. It flies at a great height above the water, and from that elevation pounces down on fish, especially the poor persecuted flying-fish. According to some authors, the name of Man-of-War Bird was

given to it because its appearance was said to foretell the coming of a ship; probably because the Frigate Pelican and ships are equally averse to storms, and both like to come into harbor if the weather threatens. Under the throat of the Frigate Pelican is a large pouch, of a deep red color, which can be distended with air at the pleasure of the bird. The pouch is larger and of a more brilliant red in the male than in his consort, and the general plumage of the female is not so bright as that of the male.

Although its swiftness of wing and general activity enable it to snatch a fish from the surface of the water, or to pounce upon the flying-fish before it can again seek the protection of its native element, yet it too often uses its powers in robbing other birds of their lawful prey. It is enabled in some mysterious manner to find its way home by night, even though it may be four or five hundred miles from land. The length of the male bird is three feet, and the expanse of wing eight feet.

CHAPTER XIII.

DIVISION I.—VERTEBRATES.

CLASS III.—REPTILES.

THIS class, which includes lizards, serpents, tortoises, toads, and frogs, have cold blood, and a circulation less perfect than those of the preceding classes. Only a portion of the blood received from the body by the heart is sent to the lungs to be subjected to the influence of air, whilst the remainder, mixed with a part of that which has undergone the change produced in respiration, is returned again into the circulation. The majority of the animals of this class have two auricles to the heart, but only one ventricle; the red blood from the lungs is poured into the left auricle, while the black blood from the body passes into the right. The two kinds of blood are immediately transferred from the auricles to the ventricle, where they mingle together, and, by the contraction of the ventricle, are forced to the lungs and the body through two distinct vessels.

Unlike the Mammalia and Birds, the vessels of Reptiles are filled with an imperfect fluid, which is not adapted to impart a high degree of life and vigor; and, therefore, as the animal heat is always proportioned to the amount of respiration, they are cold-blooded. Their lungs being small, and the circulation slow, they consume but little air, and are able to live for a considerable time without it. In general they are sluggish and indolent, have but little sensitiveness, and digest their food very slowly. The brain is small, and the nervous system imperfect; and, although they increase their species by means of eggs, they take no pains to hatch them.

I.—LIZARDS.

This order includes a very considerable variety, and is composed of the true lizards, the chameleon, the dragons, the croco

dile, and the alligator. The majority of them have four feet, but a few have only two. Their skin is covered with scales, and they have nails and teeth.

LACERTA AGILIS, or the *nimble lizard*, is a species found in Britain. Its length, from the tip of the nose to the end of the tail, is about six inches and a half. The upper part of the head is light brown, and the back and tail are variously striped and spotted with light brown, black, white, and dark brown; the under part of the body is of a dirty white color.



The Nimble Lizard.

This beautiful little creature, found in almost every part of the temperate regions of Europe, has this peculiarity, that it is the most gentle and inoffensive of all the lizard family. Though fond of basking in the sun's rays, it cannot bear excessive heat, and therefore in the hottest weather it seeks for shelter.

The *nimble lizard* may sometimes be seen in beautiful spring weather, stretched out on a sloping green bank, or extending itself on a wall exposed to the sun. The warmth greatly revives

it; and it shows the great delight which it enjoys under the influence of the sun, by the gentle agitation of its slender tail, and by the animating pleasure which sparkles in its lively, brilliant eyes. As it subsists on animals of a very minute size, if any of them come within its reach, it will dart upon them with astonishing rapidity: and if any danger is near, with equal quickness it will escape into some safe place of retreat. It is on account of its very rapid movements, which are most remarkable in warm climates, that it receives the well-merited name of the *nimble lizard*.

In May it deposits its eggs, which are very small and spherical, in some warm situation, often at the bottom of a wall fronting the south, where they are hatched by the heat of the sun.



The Salamander Lizard.

THE SALAMANDER LIZARD is in length from seven to eight inches, though in some cases much longer. It differs from other

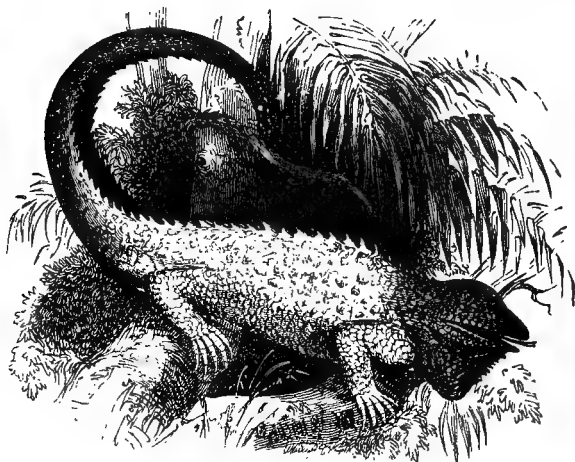
lizards by its short cylindrical tail and deep shining black color, variegated with large oblong irregular patches of bright orange-yellow.

THE BLIND-WORM is not a snake, as generally supposed, but a lizard of the Skink family. It is perfectly harmless, its small mouth and very minute teeth precluding all attempts to injure, even if it had the will. When alarmed it snaps asunder at the slightest blow, like the tail of the common lizard, and from that peculiarity has derived its name of "fragilis." It feeds almost entirely on small slugs, its jaws not being capable of admitting any larger prey. It is very common in most parts of England, and may be seen basking in the sun in hedgerows or under old walls. Its eyes are very small, but brilliant.

THE GECKOS are nocturnal lizards, remaining hidden in crevices during the day, but wandering forth at night in search of their insect prey. They run about on the smooth walls and ceilings with the greatest ease, as their feet are furnished with an apparatus exactly resembling a boy's sucker, by means of which they are able to adhere to the wall, or even to the roof. They labor under precisely the same imputations that the toad does, namely, of being venomous creatures, producing horrible diseases when touched, together with many similar tales. Geckos are spread over every quarter of the globe, but are most numerous in Southern Asia. The species represented is common in India.

THE IGUANA is a very large family, comprising about one hundred and fifty species. The length of the Common Iguana is from four to five feet. The tail is long and round, the back serrated, and the crest denticulated. Individuals of this species vary very much in color, but the prevailing color is brownish green. What gives it a very formidable appearance, it has under the chin a pouch capable of being greatly enlarged. It feeds on insects and vegetables. Though it is frightful to look upon, it is exceedingly gentle and harmless. It is striking in nature, that there are some creatures lovely to the eye, which, in their dispositions and habits, are dangerous and destructive; and others repulsive in their appearance, which have the innocence of the lamb and

the gentleness of the dove. Such is the lizard known by the name of the *common iguana*. However, when this otherwise harmless creature is agitated and irritated either by fear or anger, its eyes seem flashing with fire; it hisses like a serpent, greatly



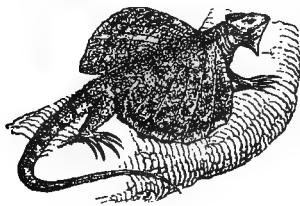
The Common Iguana.

inflates the pouch under its throat, it lashes about its tail with great violence, the scales upon its back rise erect, and its head, covered with tubercles, it raises in a most threatening attitude. We can scarcely conceive any creature to look more dreadful or forbidding.

Its usual places of habitation and retreat are the clefts of rocks or the hollows of trees. Though it is not commonly a tenant of the watery element, yet, in cases of danger, it will plunge itself beneath the surface, and there remain some time concealed. It shows great agility in its motions; it climbs trees with astonishing ease, and with great quickness it will reach the loftiest branches; it will fold its body with the branches, and thus hide itself, watching in secure ambush. About two months after winter, the females leave the woods and proceed to the sea-shore to lay their

eggs among the sand, which are in number from thirteen to twenty-five; they are very small in proportion to the size of the animal, being a little longer, and about the same thickness as pigeons' eggs.

THE FLYING DRAGON is a harmless little lizard, bearing small resemblance to the terrific animal so graphically depicted by Retsch. This curious little lizard lives on trees, and feeds on insects instead of devouring pilgrims bound to the Gnadensbilde. The peculiar structure of its body bears a singular resemblance to that of the flying squirrel. The first six false ribs are greatly elongated, and support a wing-



The Flying Dragon.

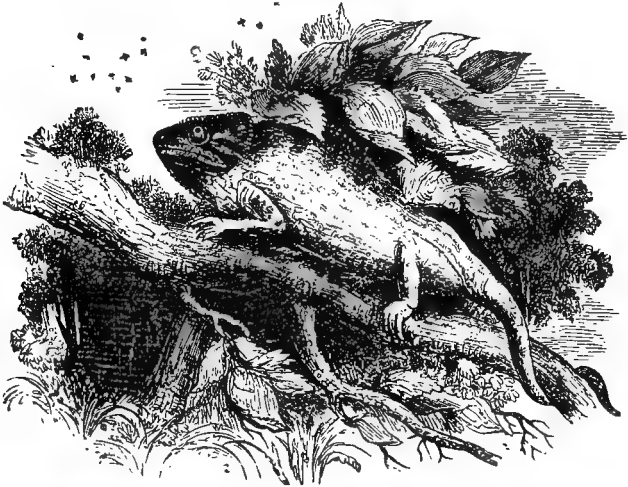
like expansion of skin, which, when stretched, serves to bear them up as they skim through the air from one tree to another. While running about on the branches, the so-called wings are folded to the side, but when it wishes to throw itself from the tree, the ribs are raised, and the wings expanded. It is common in Java, India, and Borneo.

THE COMMON CHAMELEON is plentifully found in Northern Africa, the south of Spain, and Sicily. It lives on trees, but exhibits none of the activity usually found in arboreal reptiles. On the contrary, its movements are absurdly grave and solemn. The whole activity of the animal seems to be centered in its tongue, by means of which organ it secures flies and other insects with such marvellous rapidity, that the ancients may be well pardoned for their assertion that the air formed the only food of the Chameleon.

There is something very peculiar in the structure and form of the eyes. They are almost an inch in diameter. They are of a globulous figure, and stand out considerably; and they move much, and in a contrary direction. Each eye has only one eyelid, with a small hole in the middle, through which the sight of the eye appears no larger than a pin's head. The four feet are of

equal length; those before are turned backward, and those behind are turned forward.

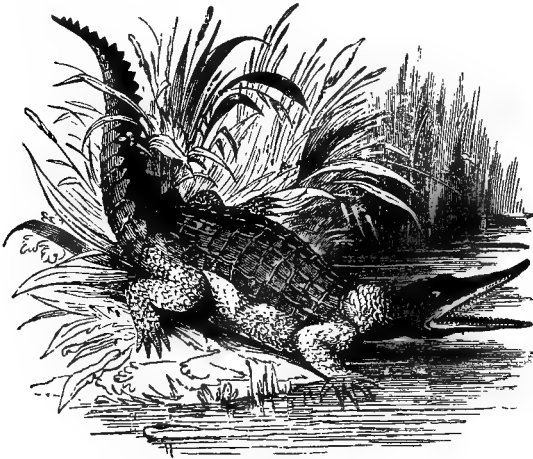
The Chameleon has the remarkable power of changing color. Its natural color, when at rest and in the shade, is a bluish grey, which, when exposed to the sun, becomes a deeper grey, while those parts which have least light upon them are changed



The Chameleon.

into spots of various colors. Sometimes, when handled, it discovers dark spots inclining to green. When placed on a black hat, it appears of the color of violet; and sometimes, if wrapped up in linen, it looks white. This creature has the most remarkable power of enlarging and contracting itself; at one time appearing long, fat, and plump; and at another, short and emaciated, like a skeleton. The Chameleon lays eggs, many at once, of an oval shape, and covered with a white skin, somewhat like parchment. This species is chiefly found in Africa and Asia; also in Spain, the isles of Bourbon, France, and Madagascar, in Fernando Po, and New South Wales.

THE CROCODILE is an inhabitant of the Old World, the Alligator of the New, and the two animals are best distinguished by the construction of the jaws. In the Crocodiles the lower canine teeth fit into a *notch* in the edge of the upper jaw, and there is in consequence a contraction of the muzzle just behind the nostrils. The lower canine teeth of the Alligators fit into a *pit* in the edge of the upper jaw, and in consequence no contraction is needed. At the back of the throat is a valve completely shutting out water, but leaving the passage to the nostrils free, so



The Crocodile.

what the Crocodile can keep his mouth open when beneath the surface, without swallowing the water, or can hold his prey to drown under the water while he himself breathes at ease with his nostrils at the surface. There is no true tongue.

The Crocodile lays eggs of the size of those of a goose, to the number of about sixty, which she covers over with sand, leaving them, like the ostrich, to be hatched by the heat of the sun. They are to be met with in the rivers Nile, Niger, and Ganges, and in many other large rivers in the southern parts of

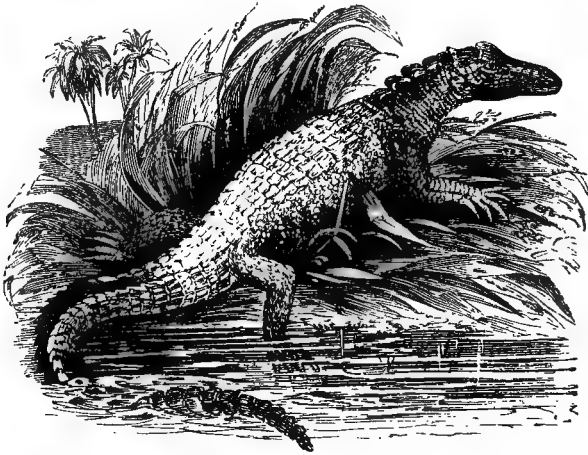
Asia, Africa, and America. It is of enormous voracity and strength; is amphibious, swims with amazing fleetness, attacks mankind and the largest animals with most daring impetuosity. Of all monsters it has the largest mouth, and moves both its jaws equally.

The Negroes of some parts of Africa are sufficiently bold and skilful to attack the Crocodile in his own element. They fearlessly plunge into the water, and diving beneath the Crocodile plunge the dagger with which they are armed into the creature's belly, which is not protected by the coat of mail that guards the other parts of its body. The usual plan is to lie in wait near the spot where the Crocodile is accustomed to repose. This is usually a sandy bank, and the hunter digs a hole in the sand, and armed with a sharp harpoon patiently awaits the coming of his expected prey. The Crocodile comes to its accustomed spot, and is soon asleep, when it is suddenly roused by the harpoon, which penetrates completely through its scaly covering. The hunter immediately retreats to a canoe, and hauls at the line attached to the harpoon until the Crocodile is at the surface, when a second harpoon is darted. The struggling animal is soon wearied out, dragged to shore, and dispatched by dividing the spinal cord. In order to prevent the infuriated reptile from biting the cord asunder, it is composed of about thirty small lines, not twisted, but only bound together at intervals of two feet.

THE ALLIGATOR, or *Cayman*, is an inhabitant of the New World, and is unpleasantly common in the rivers of North America. It pursues fish with exceeding dexterity, by driving a shoal of them into a creek, and then plunging amid the terrified mass, and devouring its victims at its pleasure. It also catches pigs, dogs, and other animals that venture too close to the river. In that case, as the animal is too large to be swallowed entire, the Alligator conceals it in some hole in the bank until it begins to putrefy, when it is dragged out, and devoured under the concealment of the rank herbage fringing the river.

The usual method of taking this creature is by baiting a most formidable four-pointed hook, composed of wooden spikes

artistically arranged, and suffering it to float in the river. When an alligator has swallowed it, he is hauled on shore by the rope, and slaughtered. Waterton gives a very amusing account of catching a cayman. The reptile had swallowed the hook, and was being towed ashore. Waterton was waiting for him, armed with the mast of the boat, to force it down the throat of the cayman



Alligator.

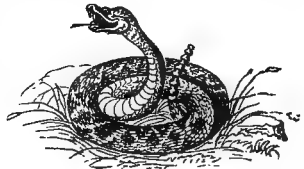
should he prove restive. "By this time the cayman was within two yards of me; I saw he was in a state of fear and perturbation. I instantly dropped the mast, sprang up, and jumped on his back, turning half round as I vaulted, so that I gained my seat with my face in a right position. I immediately seized his fore legs; and by main force twisted them on his back; thus they served me for a bridle.

"He now seemed to have recovered from his surprise, and probably fancying himself in hostile company, he began to plunge furiously, and lashed the sand with his long and powerful tail. I was out of reach of the strokes of it, by being near his head. He continued to plunge and strike, and made my seat very uncomfortable."

II. — SERPENTS.

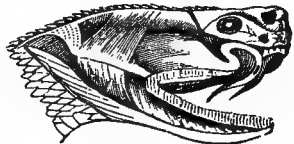
The serpents are distinguished by their long and slender bodies without limbs, and by the great expansibility of their jaws, mouth, and throat, which frequently enables them to swallow animals of greater thickness than themselves. They are always provided with teeth, which are sharp, and bent backwards. Serpents are divided into the venomous, and those which are not venomous. The latter are the most numerous, and include the largest animals, as the Boa Constrictor and the Anaconda. The former are generally armed with fangs, with which they infuse poison into the wounds they inflict. The largest and most celebrated of these animals is the rattlesnake.

THE RATTLESNAKE is a native of America. Its name is derived from the loose bony structure at the extremity of its tail, called the rattle, and which by the sound of its movements gives timely intimation of the vicinity of this terrible reptile. Fortunately, its disposition is exceedingly sluggish, and it invariably sounds its rattle when irritated or disturbed. Its bite is inevitably mortal, and death always ensues within a few hours after.



Rattlesnake.

The deadly weapons with which the venomous serpents are armed, are two long curved fangs belonging to the upper jaw, and moving on a hinge by which they lie flat in the mouth, when not wanted. An aperture exists in the point of the fang, by which a poisonous fluid, secreted in a gland at the base of the tooth, is poured into the wound, and, mixing with the blood, rapidly carries its deadly influence throughout the entire system. A short time since an American physician was exhibiting a caged rattlesnake to



Head of Rattlesnake.

his friends. He approached his hand too near the irritated reptile, who instantaneously inflicted a wound, and although every precaution was taken, the bite proved fatal in a few hours.

THE CERASTES is a well-known snake in Egypt, and derives its name from the horny scale over each eyebrow. Bruce mentions that the Cerastes can spring several feet in any direction; but his description of the stratagems employed by it, "to surprise any one who is too far from it," is probably more fanciful than correct, as snakes do not attack unless suddenly surprised or irritated. The size of the Cerastes is by no means great, as its average length is only eighteen inches. The snake charmers of Egypt employ these reptiles precisely as their brethren of India employ the Cobra de Capello.

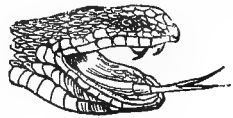
THE VIPER is a species of serpent which is, of all creatures upon the face of the earth, the most venomous. Vipers vary in



The Viper.

size and length. In Great Britain they are generally short and thick, while in foreign lands and warm climates they are found three feet in length. Their head is flat, and their mouth some-

what resembles the snout of a pig. Some kinds of serpents have two rows of teeth in each jaw, while vipers have but one row, consisting of sixteen small ones in each. The male vipers have two large teeth, which they can project considerably when they are angry; behind these teeth there is a

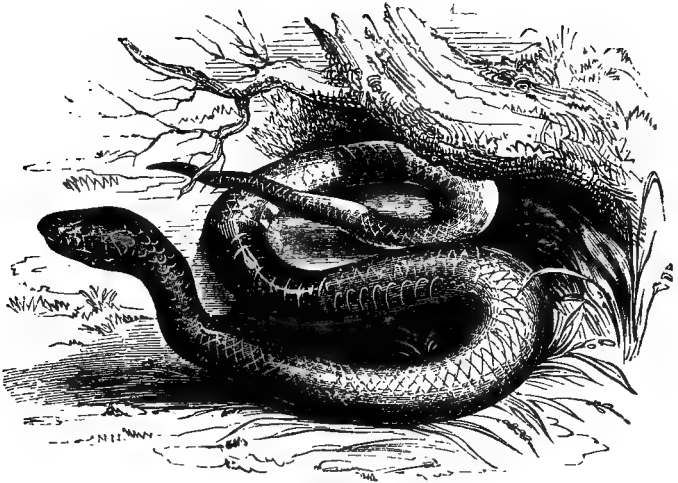


Head of Viper.

bag of deadly venom, which is distilled through an opening in the tooth, almost invisible, and thus introduced into the object of their attack by the bite. Their body is of an ash or yellow color, and the scales under their belly are of the appearance of well-polished steel. It is remarkable, that though their venom is of the most deadly description, their flesh is good for food; even broth may be made of it, and prove an excellent medicine for the cure of dangerous maladies. The females do not bring forth their young all at once; but they bring forth about twenty in twenty successive days. They are covered with small bags which open about the third day, when the young viper discovers its malignant nature, and is actually disposed and fitted so soon for entering on its deadly career.

THE ASP is thus defined by Linnæus: "Nose terminated by an erect wart; body tawny, with figured streaks, alternately distinct and confluent; beneath, steel-blue, dotted with yellow." It is about a foot in length, and nearly half an inch in thickness: it is oviparous; and in a very little while after it bites and injects its venom death is the consequence. After the wound is inflicted slumber takes place, then a deep sleep, then death! Galen, the ancient and celebrated physician, says he witnessed the activity of the poison. It was in the case of a criminal in Alexandria, condemned to die, whose sufferings were to be easily and speedily terminated. An asp was applied to his breast, and after it crawled there for a short time he expired.

THE BOA-CONSTRICTOR.—The enormous Boa-constrictor inhabits tropical America. It is not venomous, but is not the less dangerous, as the tremendous power of its muscles enables it to crush its prey in the coils of its huge body. In order to procure



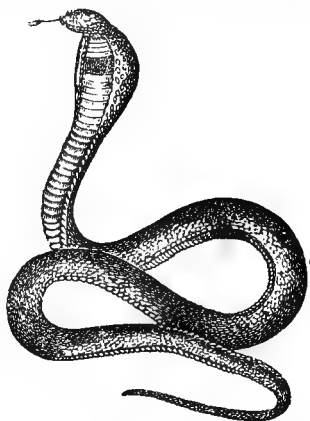
The Asp.

its food, the Boa-constrictor lies in wait by the side of some river or pool, where animals of all kinds are likely to come to quench their thirst. It patiently waits until some animal draws within reach, when, with one spring, the Boa fixes its teeth in the creature's head, coils its body round its victim, and crushes it to death. After the unfortunate animal has been reduced almost to a shapeless mass by the pressure of the snake, its destroyer makes preparations for swallowing it entire, a task which it accomplishes, although the slaughtered animal is usually very much larger than the dimensions of the serpent. At last, the snake succeeds in swallowing its prey, and then lies torpid for nearly a month, until its enormous meal is digested, when it again sallies forth in search of another.

THE COBRA DE CAPELLO is a native of India. It must not be confounded with several other hooded snakes, such as the Haje of Egypt, the snake so frequently depicted on the hieroglyphical monuments.

The serpent charmers invariably use this formidable reptile

for their performances. The exhibitors possess several Cobras shut up in baskets, and when commencing their performances, the lid of the basket is opened, and the snake creeps out. Its course is arrested by the sound of the rude fife that the charmer always carries, and it immediately expands its beautiful though threatening hood, erects its neck, and commences a series of undulatory movements, which are continued until the sound of the fife ceases, when the snake instantly drops, and is replaced in its basket by its master. The charmers appear to be able to discover snakes, and to induce them to leave their retreats. Indeed, it is rather a singular fact, that those travellers who most strongly insist that the snakes thus caught are tame and divested of their fangs, appear to forget that even in that case the creatures must have been previously caught in order to deprive them of their weapons. The length of this snake is about five or six feet.



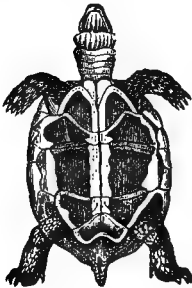
Cobra de Capello.

III.—THE TORTOISES.

The whole of this order is characterized by the complete suit of bony armor with which the animals are protected. The so-called "shell" is in fact a development of various bones, and not a mere horny appendage, like the coverings of the armadillo and manis. The upper shield is called the "carapace," and is united to the under shield, or "plastron," by certain bones, leaving orifices for the protrusion of the head and limbs. Most species are able to withdraw their head and limbs completely within the shell, and in some few the orifices are closed by a kind of hinge joint. The tortoise-shell of commerce is a series of horny plates that cover the exterior of the shield, and is in great request on

account of the beautiful wavy markings that are so familiar to our eyes.

The Tortoises and Turtles possess no teeth, but the sides of their jaws are very hard and sharp, enabling them to crop vegetable substances, or to inflict a severe bite. The family is divided into Land Tortoises, Marsh Tortoises, River Tortoises, and Marine Tortoises, or Turtles.



Land Tortoise.

THE COMMON LAND TORTOISE is found in abundance in almost every country, —in the wilds of America, as well as in the most thickly populated states of Europe. It is very long lived, individuals being known to have exceeded two hundred years. Its movements are very slow, but it can excavate a burrow with unexpected rapidity. Secure in an impenetrable covering, it bids

defiance to any ordinary enemy, except, as Sidney Smith wittily observes, “man and the boa-constrictor. Man, however, takes him home and roasts him, and the boa-constrictor swallows him whole, shell and all, and consumes him slowly in the interior.”

THE COMMON GREEN TURTLE.—The feet of the Marine Tortoises, or Turtles, are modified into fins or flippers just as are



Green Turtle.

the feet of the seals, and consequently, although the Turtles are active in the water, on land their walk is nothing but an awkward shuffle. The flippers, however, are admirable instruments for scooping out the sand, in which

the eggs are laid, and afterwards covered over. Nearly two hundred eggs are laid in one nest. The eggs are held in great estimation, but the albumen, or “white,” does not become hard by boiling.

The Common Green Turtle, whose flesh is considered such a luxury, is common in Jamaica, and most of the islands of the

East and West Indies. The turtles are captured by turning them on their backs; for the carapace is so flat, and their legs are so short, that they are forced to lie helpless until their captors have leisure to drag them away. The Green Turtle has been known to reach the weight of five or six hundred pounds. The tortoise-shell of commerce is almost entirely obtained from the Hawksbill Turtle.

IV. — FROGS.

The appearance and habits of the Frog and the Toad are so familiar as to require but little description. A short account, however, is necessary, of the peculiarities common to both Frogs and Toads.

In the early stage of their existence, these animals are termed tadpoles. They at first appear to be nothing but head and tail, but after several days have passed, four legs are observed to become developed. These rapidly increase, and the little creature closely resembles a small eel. In due time, however, the tail is lost, and the creature becomes a perfect frog. Another important change also takes place. In its tadpole state the creature was essentially a water animal, but after its change has taken place it is not able to exist under water for any great length of time, and is forced to come to the surface to breathe.

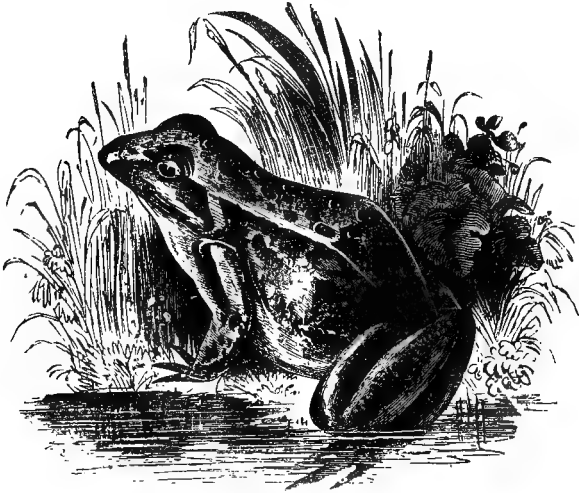
The tongue of the Frog is curiously fixed almost at the entrance of the mouth, and when at rest points backwards down the throat. When, however, the Frog comes within reach of a slug or insect, the tongue is darted out with exceeding rapidity, the slug secured, carried to the back of the throat, and swallowed.

Both frogs and toads hibernate, the former congregating in multitudes in the mud at the bottoms of ponds and marshes, while the latter choose a hole in the ground, frequently at the roots of a tree, and pass the winter in solitary dignity.

The skin of these animals has the property of imbibing water, so that if an apparently emaciated frog is placed in a damp place, it will soon look quite plump.

THE COMMON FROG is a well-known frequenter of marshy places and the banks of rivers. It is an admirable swimmer, and

from the peculiar construction of its lungs can remain for some time under water, but is forced periodically to come to the surface for the purpose of breathing.



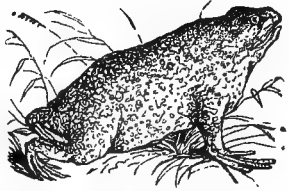
The Common Frog.

THE BULL-FROG is an inhabitant of North America. It is very voracious, feeding upon fishes, molluscs, and even young fowl. Its powers of leaping are so great, that an Indian was not able to overtake an irritated bull-frog after it had sprung three hops in advance. It is very large, measuring about seven inches in length.

THE TREE FROGS are very peculiar animals. The construction of their feet, something resembling that of the geckos, enables them to traverse the branches, and even to hang on the under surface of a pendent leaf, which it so resembles in color that the unwary insect passes by and is instantly seized by the watchful frog. The Green Tree Frog is the most common, and is plentifully found in Southern Europe and Northern Africa. There are several specimens in the Zoological Gardens, which present a

most absurd appearance as they stick against the pane of glass forming the front of their cage.

THE COMMON TOAD has had its full share of marvellous tales. Its poisonous properties are celebrated in many an ancient chronicle, as are also the virtues of the jewel contained in its head. Its skin certainly does secrete an acrid humor, which at all events defends it from dogs, who can never be induced to bite a toad a second time; but, of course, such absurd notions as the romantic story of the death of a young lady and her lover, who each ate a leaf of a shrub at the root of which a toad had made its habitation, need no refutation.



The Common Toad.

THE NEWTS are separated from the lizards on account of their changes while young. Like the frogs, they are first tadpoles, and do not assume their perfect shape until six weeks after their exclusion from the eggs. The Common Newt is a beautiful inhabitant of the ponds, ditches, and still waters. It feeds principally on tadpoles and worms, which it eats with a peculiar rapid snap.

The male Newt is distinguished by a beautiful crimson-tipped wavy crest of loose skin, that extends along the whole course of the back and tail, and which, together with the rich orange-colored belly, makes it a most beautiful creature. The female has a singular habit of laying her eggs upon long leaves of water-plants, and actually tying them in the leaf by a regular knot.

THE PROTEUS is an extraordinary animal, which has been found in dark subterranean lakes, many hundred feet below the surface of the earth, where no ray of light can possibly enter. The eyes of this singular creature are mere points covered with skin, and useless for vision; indeed, when in captivity, it always chooses the darkest parts of the vessel in which it is confined.

The Proteus breathes in two ways — by lungs and by gills, the latter organs appearing in the form of two tufts, one on each

side of the neck, just above the fore limbs. The circulation of the blood in these branchial tufts can easily be seen with a microscope of moderate power. These tufts are of a rather deeper pink tinge than the remainder of the body, which is of a very pale flesh-color. Exposure to light darkens the tints both of gills and body. It bears some resemblance to the young of the twens, which are furnished with branchial tufts, which they lose upon attaining maturity, and was therefore for some time thought to be the young of some unknown reptile. It has, however, been proved to be a perfect animal, and has been found of all sizes.

The blood discs of this animal are exceedingly large; so large, indeed, as almost to be distinguished by the naked eye. When in captivity, its movements are slow and eel-like, nor does it seem to make much use of its almost rudimentary limbs.

It has usually been found on the soft mud of a small lake in the grotto of Maddalena. It is not always present, and has been conjectured to be the inhabitant of some unknown subterranean body of water, and to have been forced through the crevices of the rocks. Besides the grotto of Maddalena at Adelsburg, they have also been found at Sittich, thirty miles distant, thrown up from a subterranean cavity.

CHAPTER XIV.

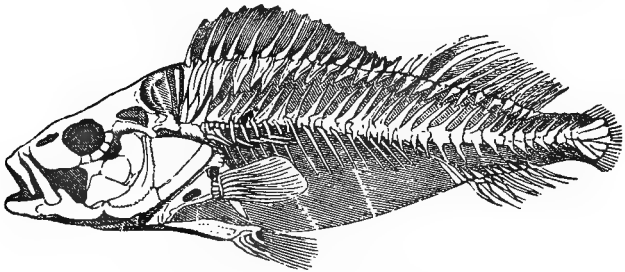
DIVISION I.—VERTEBRATES.

CLASS IV.—FISHES.

. BEING destined to pass their lives in the water only, fishes are provided with a structure and organs adapted to the element in which they reside. The heart has but one auricle and one ventricle, and the blood passes from the body into the first, whence, by means of the ventricle, it is conveyed to the gills, which perform the functions of lungs. Situated upon each side of the posterior part of the head, the gills consist of semicircular arches of bony or cartilaginous substance, to which are attached membranes, divided into little fibrils or fringes, to which the blood, after it comes from the heart, is distributed in very minute vessels. By the action of the mouth a constant current of water is passed over the gills, and the air contained in this water exerts an influence on the blood circulating through them, producing changes similar to those effected in the lungs of other animals by inhaled air. The blood does not return to the heart from the gills, but, being collected into one large artery, is passed down along the spine, to be distributed to the different parts of the body, and again returned to the heart through the veins.

The covering of fishes is a strong, thick skin, in addition to which most of them have scales, arranged one over another like shingles on the roof of a house. A thin coating of slime or mucus spread over their bodies protects them from immediate contact with the water. Fishes have the senses of sight, hearing, smell, taste, and touch; the latter very imperfectly, as they possess no organ which seems adapted for its exercise, except the snout and mouth, and a sort of feelers, which some species have growing around the mouth. The skeleton is constructed of bones, com-

monly softer and less earthy than those of other animals, and in some they are entirely cartilaginous. The stomach and intestines



Skeleton of Perch, showing the Bony Structure.

are formed in a manner similar to those of other vertebrates, and digestion is conducted in the same general way. Their food consists principally of other fish, worms, and shell-fish.

Most fish possess a singular organ called the "swimming-bladder." This is a membranous pouch, varying exceedingly in size and shape, situated close under the spine, and filled by some means with gas, mostly found to be nitrogen, but in deep-sea-fishes, an excess of oxygen is discovered to exist. The fish seems to be able to rise or sink by means of compressing or expanding this pouch, without being forced to make use of its tail or fins.

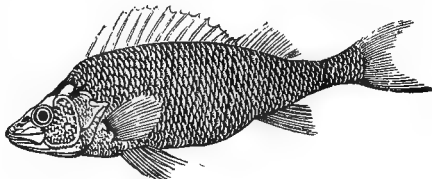
The smooth scaly covering with which most fish are furnished, is admirably fitted both for defence against the water, and for enabling the fish to glide easily through places where a rough covering would have held it prisoner. Many valuable characteristics are derived from the shape of the scales in different fish. There are four principal varieties, called, 1. Placoid, or flat scales; 2. Ganoid, or polished scales; 3. Ctenoid, or toothed scales; and 4. Cycloid, or circular scales.

I.—BONY FISHES.

THE COMMON PERCH is well known to anglers both as a "bold biting fish," and as a fish that does not yield up its life without endangering the person of its captor; for the formidable

row of spinous rays belonging to the first dorsal fin have wounded the hands of many an incautious angler.

It is extremely voracious, so much so that after all the legitimate bait has been exhausted, it is a common practice for the fisherman to place on his hook the eyes of the perch already taken, which are as eagerly bitten at as the worms were formerly. An anecdote is related of a gentleman who struck at a perch, but unfortunately missed it, the hook tearing out the eye of the poor creature. He adjusted the eye on the hook, and replaced the line in the water, where it had hardly been a few minutes before the float was violently jerked under the surface. The angler of course struck, and found he had captured a fine perch. This, when landed, was discovered to be the very fish which had just been mutilated, and which had actually lost its life by devouring its own eye. It is quaintly observed in Izaak Wal-



Perch.

ton, that "if there be twenty or forty in a hole, they may be at one standing all caught one after another, they being like the wicked of the world, not afraid though their fellows and companions perish in their sight."

The Perch seldom exceeds two pounds and a half in weight, and a perch weighing a pound and a half is considered a very fine fish.

THE MACKAREL.—The elegant shape and resplendent colors of the Mackarel point it out as one of the most beautiful fishes known. Nor is it only valuable for its beauty, as it is highly prized as an article of food in most parts of the world.

When the fishermen employ the line for the capture of the Mackarel, the hook is baited with a strip cut from a dead mackarel, and is suffered to trail overboard. The fish bite eagerly at

this cannibal kind of bait, and are frequently taken by baiting the hook with a strip of scarlet leather or cloth.

Vast numbers are annually taken on the coasts of New foundland, which fishermen from the United States, England and France visit every year. They are salted and barrelled at the fishery, and transported thence to different parts of the world for sale.

THE SWORD-FISH inhabits every part of the Mediterranean Sea, and has several times been seen near the shores of England and Scotland. The "sword" for which this fish is so famous, is an elongation of the upper jaw, of great strength, and capable of doing considerable injury to any object against which it directs its attacks. In the British Museum is a portion of the bottom of a ship, pierced completely through by the "sword" of one of these fish. Its unfortunate owner must have instantly perished by the shock, for the sword was imbedded almost to its base, and broken short off. In one instance, a Sword-fish attacked a whaling-ship, and drove its weapon "through the copper sheathing, an inch-board sheathing, a three-inch plank of hard wood, the solid white oak timber of the ship twelve inches thick, through another two-and-a-half-inch hard oak ceiling plank, and lastly, perforated the head of an oil cask, where it still remained immovably fixed, so that not a single drop of oil escaped.

In the Mediterranean, the fishermen eagerly chase the Sword-fish. The harpoon and line are used much in the same manner as in the whale fishery. The Sicilian fishermen have a strange superstition that if the Sword-fish were to hear a word of Italian, it would instantly dive and escape them. They therefore restrict their vocal sounds to an unintelligible chant. It is said that the whale is an object of particular enmity to the Sword-fish, and that ships are struck by it, being mistaken for whales.

The length of this fish is usually from twelve to fifteen feet. It is said to feed principally on tunnies, pursuing the shoals, and transfixing the fish with its sword.

THE SEA-HORSE has often been found off the southern coasts of England. The habits of this fish are very singular and

interesting. A pair were kept alive for some time in a glass vessel, and exhibited considerable activity and intelligence. They swam about with an undulating kind of movement, and frequently twined their tails round the weeds placed in their prison. Their eyes moved independently of each other, like those of the chameleon, and the changeable tints of the head closely resemble that animal. More than once, these curious fish have been seen curled up in oyster shells. The singular creatures called Pipe-fish also belong to the Syngnathidæ.



The Sea-horse.

THE REMORA, or *Sucking-fish*, is remarkable for the peculiar apparatus situated on the upper part of its head. By this it can adhere to any object so firmly that it is a difficult matter to make it loose its hold. It is often found adhering to large fish or to the bottoms of ships, probably in both instances for the sake of the fragments of food rejected by the one, or thrown overboard from the other.

The older writers on Natural History fully believed that one Remora had the power of arresting the swiftest ship in its course, and fixing it firmly in the same spot in spite of spread canvas and swift gales. As the Remora is about the same size as a herring, our ancestors naturally considered this a very curious circumstance, and wrote no few poems on the subject. The following *true* account of this fish is extracted from Macgillivray's Voyage of the Rattlesnake :

“Small fish appeared to abound at this anchorage (the Calvados group of islands). I had never before seen the Sucking-fish (*Echeneis remora*) so plentiful as at that place; they caused much annoyance to our fishermen by carrying off baits and hooks, and appeared always on the alert, darting out in a body of twenty or more from under the ship's bottom when any offal was thrown overboard. Being quite a nuisance, and useless as food, Jack often treated them as he would a shark, by sprit-sail yarding, or some less refined mode of torture. One day, some of us while walking the poop had our attention directed to a sucking-fish

about two and a half feet in length, which had been made fast by the tail to a billet of wood by a fathom or so of spun yarn, and so turned adrift. An immense striped shark, apparently about fourteen feet in length, which had been cruising about the ship all the morning, sailed slowly up, and turning slightly on one side, attempted to seize the apparently helpless fish, but the sucker with great dexterity made himself fast in a moment to the shark's back. Off darted the monster at full speed, the sucker holding fast as a limpet to a rock, and the billet towing astern. He then rolled over and over, tumbling about; when, wearied with his efforts, he lay quiet for a little. Seeing the float, the shark got it into his mouth, and disengaging the sucker by a tug on the line, made a bolt at the fish; but his puny antagonist was again too quick, and, fixing himself close behind the dorsal fin, defied the efforts of the shark to disengage him, although he rolled over and over, lashing the water with his tail until it foamed all around. What the final result was, we could not clearly make out."

THE COMMON CARP is a well-known inhabitant of ponds, lakes, and sluggish rivers of England and the continent of Europe. It is a very shy and wary fish, rejecting one day a bait which had been freely taken the day previous.

It lives to a great age, and when very old its scales turn grey just as human hairs do. In several places in France numbers of Carp were kept until they attained an enormous size. These great sluggish fish were accustomed to come to the water's edge in order to be fed at the call of their keeper. Feeding the Carp was almost a hereditary amusement of the latter kings of France.

Very few fish are so tenacious of life as the Carp. It is the custom in Holland to keep these fish in nets filled with wet moss. They are fed with bread and milk, and are preserved in health by frequent immersion in water, in order to keep the moss thoroughly wet.

THE GOLD-FISH, or *Golden Carp*, is another species of the genus *Cyprinus*. It was originally brought from China, about two hundred years since, when it was considered a great curiosity.

now, however, it is quite common, and is found to live in ponds even when the surface of the water is thickly covered with ice.

THE TENCH especially delights in muddy banks of ponds, where the weeds grow thickly. Roget gives an account of a tench that had been taken out of a pond almost filled up with stones and rubbish, and which had actually grown into the shape of the hole where it had been confined, evidently for many years. The weight of that fish was eleven pounds nine ounces. Four hundred tench and as many perch were also taken out of the same pond. This fish is even more tenacious of life than the carp.

THE ROACH is very common in most rivers of England, and is generally spread over the temperate parts of Europe. It is by no means a large fish, rarely exceeding two pounds in weight, and but seldom attaining that size. These fish usually live in small shoals, and pass from one part of the river to another.

The Roach is not unlike the Dace, but may be easily distinguished by its bright red ventral fins, those of the dace being silvery white. It is rather a favorite with anglers, as it bites or rather nibbles at the bait in such a dainty and delicate manner, that the disappointed fisherman not unfrequently finds the bait gone without the movement of his float betraying the theft. A quick eye and a dexterous hand are required for this sport. The float is so balanced as barely to appear above the surface of the water, for, unlike the perch, that dashes at the bait and boldly jerks the float at once under water, the Roach does little more than swim under the bait as far as it can, and then just gives a gentle nibble, repeating the process until the bait has entirely left the hook.

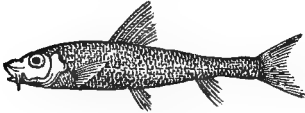
THE DACE is usually found wherever the roach resides, and, like that fish, swims in shoals. It makes an excellent bait for trolling, as the silvery whiteness of its scales renders it a conspicuous object, and serves to attract the pike. It seldom exceeds nine or ten inches in length



The Dace.

THE BLEAK and the MINNOW both belong to the genus *Leuciscus*. The former fish is remarkable for the use made of its scales, which when washed in water deposit a powder much used in the manufacture of artificial pearls.

In some counties the LOACH goes by the name of "Beardie," in allusion to the little fleshy particles that hang from its lips. It has also the name of Groundling, on account of its habit of living close to the bottom of the water.



The Loach.

It is a common fish, and may be taken in most streams, especially if the bait is drawn over the bed of the stream. The principal peculiarity about the fish, is the comparatively great breadth of the tail where it joins the spine. This formation, together with the generally pellucid appearance of its body, at once distinguish it from any other fish.

THE PIKE affords much sport to anglers, who generally employ a method of fishing called "trolling." A gudgeon, roach, or large minnow is so fixed to a number of formidable hooks, that when drawn through the water, it spins rapidly round, and attracts the notice of the watchful Pike, who dashes at the glittering bait with a violence that jars the rod down to the very butt. Off swims the pike to his place of concealment, leisurely turns the head of the bait downwards, and swallows it. Now, to swallow



The Pike.

the fish is easy enough, but the array of barbed hooks proves an effectual obstacle to the endeavors of the Pike to get rid of the unwelcome morsel as soon as the angler jerks the line, and gives the Pike to understand that hooks have points. The deluded Pike now endeavors to break the line, but a good fisherman foils all his efforts, and at last lands him, wearied and bleeding, but ferocious to the last.

The method of fishing for Pike called "trimming" is hardly worth mention. A line baited with living fish is fastened to a

float, and suffered to lie on the surface of the water. The Pike, seeing the bait swimming about, dashes at it and hooks itself in the effort.

This fish varies in size from two or three pounds' weight to twenty or thirty, but a Pike weighing fifteen pounds is considered a very fine fish. Above that weight they are almost useless for the table. A Pike weighing less than two pounds is called a jack.

The appetite of this fish is almost insatiable. Mr. Jesse threw to one Pike of five pounds' weight, four roach, each about four inches in length, which it devoured instantly, and swallowed a fifth within a quarter of an hour. Moor-hens, ducks, and even swans have been known to fall a prey to this voracious fish, its long teeth effectually keeping them prisoners under water until drowned.

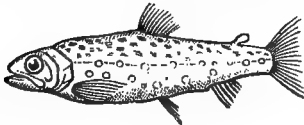
THE FLYING-FISH.—This fish, so celebrated in most books of voyages, is found in the warmer latitudes, but has several times been seen off our coasts. The so-called "flight" is very similar to that of the flying squirrels and dragons, the fish merely springing out of the water with a violent impetus, and sustaining itself in the air by means of its enormous pectoral fins. It is not able to alter its course while in the air, nor to rise a second time without repeating its course through the water. The reader will notice the remarkable fact, that individuals of three wingless classes, the Mammalia, the Reptiles, and the Fishes, have each the power of sustaining themselves in the air.

The "flight" of this fish seldom exceeds two hundred yards. The unfortunate creatures are pursued in the water by "Dorados," erroneously called dolphins, and other fishes of prey. To escape their finny tyrants, they spring into the air, and for a while escape. But the gulls and albatrosses are on the watch, and pounce on the Flying-fish from above, so that the persecuted creatures are tolerably sure to fall a prey to one or the other of their foes.

The usual height of flight is about two or three feet above the surface of the water, but it has frequently been known to

exceed fourteen feet, and in one instance a Flying-fish came skimming into the ports of a large man-of-war, nearly twenty feet above the water.

THE SALMON is a migratory fish, annually leaving the sea, its proper residence, and proceeding for many miles up rivers for the purpose of depositing its spawn. This duty having been accomplished, it returns to the sea in the spring. The perseverance of this fish in working its way up the stream is perfectly wonderful. No stream is rapid enough to daunt it, nor is it even



Salmon.

checked by falls. These it surmounts by springing out of the water, fairly passing over the fall. Heights of fourteen or fifteen feet are constantly leaped by this powerful fish, and when it has arrived at the higher and shallower parts of the river, it scoops furrows in the gravelly bottom, and there deposits its spawn. The young, called "fry," are hatched about March, and immediately commence their retreat to the sea. By the end of May the young Salmon, now called "smolts," have almost entirely deserted the rivers, and in June not one is to be found in fresh water. Small Salmon weighing less than two pounds are termed "salmon peel," all above that weight are called "grilse."

The havoc wrought among Salmon by foes of every description is so enormous, that notwithstanding the great fecundity of the fish, it is a matter of surprise that so many escape destruction; for although the fish are preserved from their human foes by many stringent regulations, yet other foes, such as otters, who devour the large fish, and other fish who devour the spawn, have but little respect for laws and regulations.

While in the rivers, multitudes of Salmon are annually caught, usually by stake nets, which are capable of confining an immense number of fish at one time. Salmon spearing is a favorite amusement. This animated and exciting sport is usually carried on by torch-light. The torches, when held close to the surface of the water, illumine the depths of the river, and render

every fish within its influence perfectly visible. The watchful spearman, guided by slight indications bearing no meaning to an unpractised eye, darts his unerring spear, and brings up in triumph the glittering captive, writhing in vain among the barbed points. In the northern rivers this destructive pursuit is carried on to a great extent, more than a hundred salmon being frequently taken in an evening. Anglers also find considerable sport in using the fly for this beautiful and active fish, whose strength makes it no mean antagonist.

THE TROUT is found in rapid, shallow, sparkling streams, especially if there should be little falls at intervals. The usual method of fishing for trout is with a fly, but trolling with a minnow is often successfully used, nor does the trout reject a well-selected and properly arranged worm.



The Trout.

The brilliant speckled tints of this beautiful fish vary much according to the locality and the time of year. In May the fish assume their brightest colors and their most delicate flavor. The size of the fish also varies exceedingly, being from half a pound in weight and about eight inches in length to ten or fifteen pounds' weight.

The Smelt belongs to this family, and in its progress to the sea is destroyed in great quantities in mill-ponds, etc.

THE HERRING makes its annual appearance in April. This most valuable fish arrives in enormous shoals, five or six miles in length and three or four in breadth. Their advent is heralded by various sea birds, such as the gannets and gulls, which constantly hover over the shoals and commit unceasing devastations among them. Yet in spite of the myriads destroyed



The Herring.

by birds and fishes, in spite of the shoals captured by man, in spite of the vast quantity of spawn devoured by other fishes, their numbers seem quite undiminished, and each year they are led by the instinct inculcated in them by Providence, to visit the shore

in incalculable numbers, not only to yield to man an unfailing supply, but to make the necessary provision for the increase of their number.

When taken out of the water, the Herring dies almost immediately, as do all fish that live near the surface of the water. Those, on the contrary, as the carp, tench, eels, and the flat fish, who reside at the bottom, are able to sustain life for a much longer period when taken out of their native element. It is therefore necessary that the herrings should be cured as soon as possible.

THE SHAD, like the herring, visit our coasts about the beginning of April, and ascend the rivers in enormous shoals, for

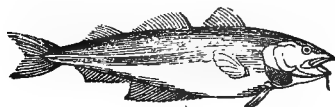


The Shad.

the purpose of depositing their spawn in the less turbulent waters near the heads of the streams. These fish are caught in the same way as the herring, in large seines, made for the purpose, and it is not uncommon for

one haul of a seine to bring in from two thousand to five thousand fish, averaging from twelve to twenty-two inches each in length, and weighing from three to ten pounds. Large quantities are salted and dried, and thus furnish a profitable article of commerce.

THE COD.—In this sub-order the bones of the ventral fins are placed *under*, and support the bones of the shoulder. The well-known Cod-fish is principally found on the coasts of Newfoundland, but is taken in great numbers on the British shores. The hook



The Cod.

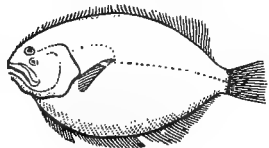
is generally employed for the capture of this fine fish. An immense number of hooks, each baited with a whelk or limpet, and attached to short lines, are fastened at intervals

along a rope, which is stretched, or shot, as it is termed, across the tide, in order to prevent the hooks from getting entangled. Such is the voracity of the fish, that nearly five hundred have been taken by one man in the course of ten hours. The intense cold renders the Cod fishery a service of great hardship.

Several successful experiments have been made to preserve this fish in salt water ponds, in which it appears to thrive well. The fecundity of this fish is almost incredible, the roe of one fish having been ascertained to contain *nine million eggs*. The Whiting belongs to this family.

In the FLAT-FISH we see a most extraordinary instance of adaptation of structure to peculiar circumstances. We have all seen Flat-fish, and all know that the upper side is dark, and the under side nearly white. The word 'side' is used advisedly, as these curious fish actually lie *on their sides* at the bottom of the water while undisturbed, or merely feeding. When, however, they are alarmed, they rapidly assume the vertical position, and dart off with great speed. The dark upper surface serves to protect them from becoming too visible to enemies above. The two eyes are also placed on the upper side of the head for obvious reasons. In fact, the whole fish appears as if it had been laid on its side, and rolled flat, the head also being twisted round, and the lower eye removed to the upper surface.

THE TURBOT is found on the coasts of most parts of England, but is mostly confined to the southern coasts of Ireland. The fishery is conducted both by nets and lines. The net, called the haul-net, drags from the bottom not only turbot but



Turbot.

other flat fish, such as soles and plaice. The line, used when the bottom of the sea is too deep or rocky for the net, is armed with many hooks, baited with smelts and other small fish. The lampern, or river lamprey, was formerly in very great use as a bait, as its brilliant silvery appearance, and its great tenacity of life, rendered it peculiarly fit for the capture of the voracious but dainty turbot, who, rejecting all stale or discolored baits, eagerly devours them if bright colored and moving. The fishermen state that the turbot will not touch a bait that has been bitten by any other fish. On the English coasts one turbot-line frequently extends for three miles in length, and is furnished with 2500 hooks, which are at-

tached to the main line by small horse-hair lines, each twenty-seven inches in length. This enormous line is "shot" across the current at the turn of the tide. Each boat possesses a double set of lines, so that one line is "shot" and another "hauled" every turn of the tide.

The little star-like bones imbedded in the upper part of the skin of this fish are very curious. The dark side of the turbot is the left, on which the eyes are also placed. Reversed turbot, and even turbot dark on both sides, are not at all uncommon.

THE EELS form the sub-order of the APODA, or footless fish, so called from the absence of ventral fins. These fish assume a form very similar to the serpents. Although on a hasty examination they seem to be devoid of scales, yet when the skin is dried, very minute scales may be seen through the semi-transparent outer skin, and may be easily detected by carefully separating the two skins.

Eels inhabit muddy ponds and rivers, and are common in



The Common Eel.

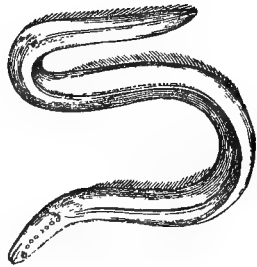
many canals. They are susceptible of cold, and constantly descend the rivers to deposit their spawn in the

sea, after which, the young when hatched work their way up the rivers, thereby precisely reversing the habits of the salmon. They are capable of living out of water for a long time, and often make voluntary land excursions, either for the purpose of avoiding an insurmountable fall, or in search of frogs or worms, on which they feed. In the winter, while they are lying torpid in the mud, multitudes are taken by eel-spears—many-pronged instruments, whose prongs are feathered with recurved barbs, which, when pushed into the mud, entangle the eels, and effectually prevent their escape.

THE CONGER EEL is found in all the rocky parts of the British coasts, and is exceedingly common on the coasts of Cornwall. It is usually caught with a hook, the best bait of which is a sand-launce, a little fish belonging to the same family as the eels, and which buries itself five or six inches deep in the sand when the tide ebbs, and releases itself on the next flood tide. The

fishermen rake it out of the sand with iron hooks. A pilchard is a common bait for the Conger.

The size of this fish is sometimes very great. Yarrell mentions, in his "British Fishes," that "specimens weighing eighty-six pounds, one hundred and four pounds, and even one hundred and thirty pounds, have been recorded, some of them measuring more than ten feet long and eighteen inches in circumference. They possess great strength, and often form very formidable antagonists if assailed among rocks, or when drawn into a boat with a line."



Conger Eel.

THE ELECTRIC EEL, OR GYMNOTUS.— This curious fish, which exhibits the singular phenomenon of voluntary electric power residing in a living animal, is an inhabitant of the fresh-water rivers and ponds of Surinam, and other parts of South America, where it was first discovered in the year 1677. This power of emitting an electric shock is apparently given it in order to enable the creature to kill its prey.

Captain Stedman, in his account of Surinam, describes an adventure with the electric eel, which he, of course, had many opportunities of seeing. He attempted, for a trifling wager, to lift up a gymnotus in his hands, but according to his own words:—"I tried about twenty different times to grasp it with my hand, but all without effect, receiving just as many electrical shocks, which I felt even to the top of my shoulder. It has been said that this animal must be touched with both hands before it gives the shock, but this I must take the liberty of contradicting, having experienced the contrary effect." The eel mentioned was a small one, only two feet long; but one that had arrived at its full growth would have given a very much stronger shock. An English sailor was fairly knocked down by a shock from one of these eels, nor did he recover his senses for some time. It is said that the shock can pass up a stick, and strike the person holding it. Mr. Bryant

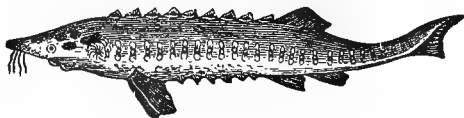
and a companion were both struck while pouring off the water from a tub in which an electric eel had been placed.

II.—CARTILAGINOUS FISHES.

THE STURGEON.—The remaining fishes belong to the Cartilaginous sub-class; that is, their skeletons are composed of cartilage, and not of true bone.

The first sub-order possess free gill-covers, like those of all the preceding fish; but the remainder breathe by means either of slits, as in the sharks, or holes, as in the lampreys.

The Sturgeon is remarkable for the rows of bony plates extending along the body. It is exceedingly common in the United



Sturgeon.

States, and in the northern parts of Europe, where regular fisheries are organized for its capture. Almost every part of it is used. Isinglass is obtained by drying and shredding the air-bladder; caviare is made of the roe of the female, and the flesh is extensively preserved both by pickling and salting, besides the large quantities that are consumed fresh. The flavor of its flesh is said not to be unlike veal.

It is frequently taken in our rivers, usually by entangling itself in the nets, and although it then does some injury to the nets by its violent struggles to release itself, it is otherwise perfectly harmless. Yarrell mentions that a sturgeon measuring eight feet six inches in length, and weighing two hundred and three pounds, was taken in a stake net near Findhon in 1833. A specimen was once caught in the Esk, weighing four hundred and sixty pounds. The female always deposits her eggs in fresh water, and the young, when hatched, descend to the sea, and are supposed not to return again until, in their turn, they seek the fresh water in order to deposit their spawn.

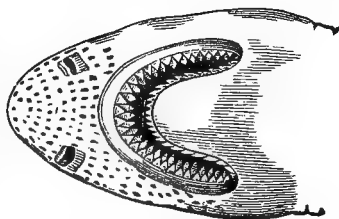
THE WHITE SHARK is a well-known scourge of the Mediterranean Sea and the Atlantic Ocean. This is the creature so detested by sailors, who, when they have caught a "shirk," subject it to every possible indignity.

This voracious creature has been known to swallow an entire man, and as it is in the habit of lurking about ships for the sake of the scraps thrown overboard, and almost invariably swallows whatever is cast over the side, the contents of its stomach are often

of a most heterogeneous description. The sailors always amuse themselves by seeing what the shark had "stowed away," and the substances thus brought to light have been most curious. The entire contents of a lady's work-basket, down to the scissors, were found in the interior of one shark, and another had actually swallowed an entire bull's hide—a circumstance which led the operating sailor to remark that the shark had swallowed a bull, but could not "digest" the hide.

The amphibious South Sea Islanders stand in great dread of the Shark, and with good reason, for not a year elapses without several victims being offered to the rapacity of this terrific animal. Nearly thirty of the natives of the Society Islands were destroyed at one time by the sharks. A storm had so injured the canoe in which they were passing from one island to another, that they were forced to take refuge on a raft hastily formed of the fragments of their canoe. Their weight sunk the raft a foot or two below the surface of the water, and, dreadful to say, the sharks surrounded them and dragged them off the raft one by one, until the lightened raft rose above the water and preserved the few survivors.

THE HAMMER-HEADED SHARK inhabits the same latitudes. This curiously constructed fish closely resembles the white shark in all respects but the head, which is widened out at each side, exactly like a double-headed hammer or mallet. The eyes, being



Head of White Shark.

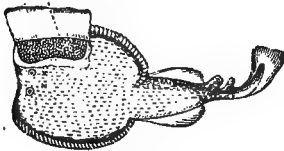
placed at each extremity of the head, must of course possess a very extended power of vision.

THE THRESHER, a fish which has a curious habit of springing out of the water and inflicting a violent blow with its tail on any object that annoys it, belongs to the Shark tribe.

THE SAWFISH is found in the greatest perfection in the tropical seas, although it also inhabits the Mediterranean. The weapon from which the fish derives its name, is a flat, long prolongation of the head, on each edge of which are set hard tooth-like projections, curiously inserted into the bone.

This fish has been known to employ its saw in the attack of the whale, burying the apparently inappropriate weapon to the very root in the body of the whale; nor are instances wanting where the saw has been found firmly imbedded in the hull of a ship.

The strength of the Sawfish is very great. Captain Wilson gives an account of the capture of a Sawfish, measuring twenty-two feet in length, and weighing nearly five tons. After the fish had been entangled in a net for several hours, making violent efforts to escape, Captain Wilson got a rope firmly fixed round its saw, and set thirty men to haul at the rope. The whole thirty could not move it one inch, nor was it until one hundred men had been pulling at the rope for nearly the whole of the day, that they succeeded in dragging it on shore. Even then it made such violent strokes with its saw, that they were forced to fasten strong guy ropes to prevent it from cutting them to pieces. It was finally disabled by a Spaniard, who cut through the joint of the tail.



Torpedo.

THE TORPEDO affords a second instance of the electric power residing in a fish. The organs that produce the electric shock are shown externally by two elevations extending from the eyes about half down the body.

Although it has once or twice been caught on our coasts, it is usually found in the Mediterranean, where its powers are well known, and held in some awe. The shock that the Torpedo gives, of course, varies according to the size of the fish and its state of

health, but a tolerably large fish in good health, can, for the time, disable a strong man. From the effects of its shock, it is in some parts called the Cramp-fish.

Colonel Montagu notices a Torpedo caught on a turbot line, at Tucky. It weighed about one hundred pounds, and completely puzzled the fisherman, who found it hanging dead on the hooks, and had never seen such a creature before. Colonel Montagu quaintly remarks, that had it not been dead, the fisherman would certainly have had a shock that would have made him remember the species again.

A section of the cut shows the batteries of the fish, which are composed of a large number of tubes pressed together like the cells of a honey-comb, and filled with a very thick fluid. By means of a nerve branching out from the brain to the battery, the animal can work it whenever it pleases.

THE THORNBACK SKATE derives its name from the spiny armature of the tail, with which the fish defends itself most vigorously by bending itself almost into a semicircle and lashing about with its tail. The female of the Thornback Skate is termed a Maid. It often attains to a large size, the largest known being twelve feet in length, and nearly ten in width.

THE LAMPREY.—These curious fishes, in many respects the lowest in organization of the vertebrate animals, are chiefly remarkable for the singular construction of the mouth, which, formed like that of the leech, enables the Lampreys to hold firmly to any object by suction. The breathing apparatus appears externally to consist of fourteen small apertures, seven on each side of the neck. Their progress through the water is accomplished by a rapid undulating movement.

THE MARINE LAMPREY is found in the Mediterranean, and in most of the northern European rivers. It has also been discovered in America. Like many other fishes, it travels for many miles up rivers for the purpose of depositing its spawn, at which time it is considered to be in the highest perfection. The spawn is deposited in furrows, some excavated by the parent Lampreys, who, by the help of their sucker-like mouths, rapidly remove even large stones.

CHAPTER XV.

DIVISION II.—INVERTEBRATES.

CLASS V.—INSECTS.

THE INVERTEBRATES have no such skeleton as the Vertebrates, but, instead thereof, a collection of organs, more or less distinct, and generally composed of a soft, yielding texture; though occasionally protected by an external covering of shell, or other hard substance. The animals of this division, having no skeleton, are, of course, without any vertebral column, and are hence denominated *Invertebral*. The brain and nervous system are less distinct and less important than those of the *Vertebrates*, and do not resemble the corresponding organs of that division; while, with a few exceptions, the blood of the *Invertebrates* is *white*.

INSECTS have no heart, but, in lieu of that organ, they are supplied with a vessel, or reservoir, situated along the back, and extending from head to tail, which is filled with a transparent, viscous fluid, and undergoes irregular contractions. This reservoir contains the blood or nutritious fluid of the animal, which, by absorption, is conveyed gradually to the various organs. The bodies of insects are supplied with air by means of tubes, called tracheæ, which convey it to every part. These tubes communicate externally by means of openings called stigmata; and, therefore, throughout its entire circulation the blood undergoes the changes wrought upon it by the air. Two knotted cords, running the length of their bodies, take the place of the brain, and perform the same functions. No organs of hearing have yet been discovered, but they are known to possess the senses of sight, smell, taste, and feeling.

A hard external covering serves to support the motions, and protect the organs, of insects. In some species it is merely a tough, muscular coating, which surrounds the body in the form

of rings, while others are provided with a complete horny or shell-like case.

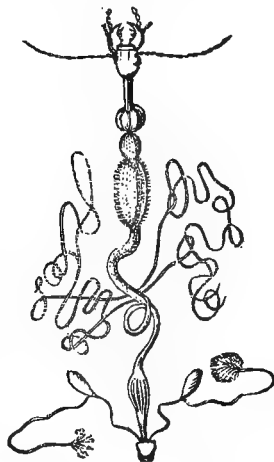
Most insects have wings, and such undergo certain metamorphoses, or changes of form. Those which are unsupplied with wings continue during life of the same form and structure as at birth. They are all furnished with six legs, with the exception of the millepedes, which always have more, and the number of which also increases with their age.

Linnæus forms seven orders of Insects, and his classification is founded upon the presence or absence of wings, their number, texture, arrangement and the nature of their surface, and also upon the presence or absence of a sting. These orders are—I. *Coleoptera*, or sheath-winged insects; II. *Hemiptera*, or half-winged; III. *Lepidoptera*, or scale-winged; IV. *Neuroptera*, or nerve-winged; V. *Hymenoptera*, or membrane-winged; VI. *Diptera*, or two-winged; and VII. *Aptera*, or wingless insects.

I.—SHEATH-WINGED INSECTS.

In the Coleopterous Insects the upper pair of wings consists of a crustaceous or horny substance; and these cover or defend the other pair, which, being of a more soft and flexible texture, are folded beneath them. This species of insects is very numerous and well known, and many of them are very remarkable for the singularity of their forms and the beauty of their colors. It includes the beetles, winged bugs, etc., all of which undergo a complete metamorphosis, or change of form.

THE ELEPHANT BEETLE is the largest of this kind hitherto known, and is found in South America, particularly Guiana and Surinam,



Digestive Apparatus of the Beetle

as well as about the river Oroonoko. It is of a black color, and the whole body is covered with a very hard shell, full as thick and as



Beetle.

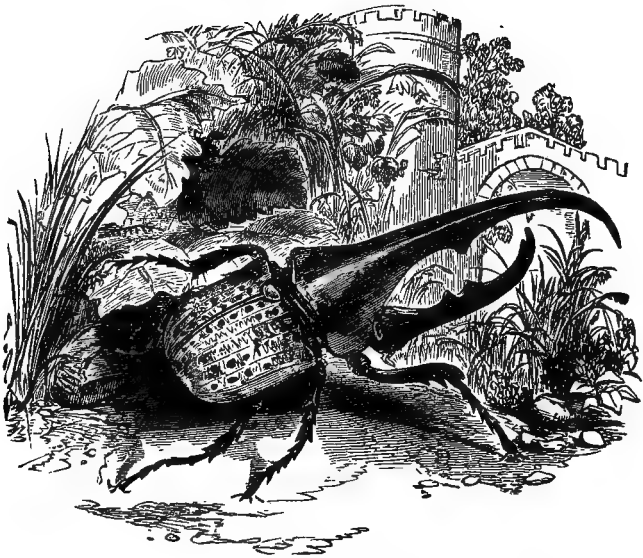
strong as that of a small crab. Its length, from the hinder part to the eyes, is almost four inches, and from the same part to the end of the proboscis, or trunk, four inches and three quarters. The transverse diameter of the body is two inches and a quarter, and the breadth of each elytron, or case for the wings, is an inch and three-tenths. The antennæ, or feelers, are quite horny; for which reason the proboscis, or trunk, is movable at its insertion into the head, and seems to supply the place of feelers. The horns are eight-tenths of an inch long, and terminate in points. The proboscis is an inch and a quarter long, and turns upwards, making a crooked line, terminating in two horns, each of which is near a quarter of an inch long, but they are not perforated at the end like the proboscis of other insects. About four-tenths of an inch above the head, or that side next the body, is a prominence or small horn, which, if the rest of the trunk were away, would cause this part to resemble the horn of a rhinoceros. There is indeed a

beetle, so called, but then the horns or trunk has no fork at the end, though the lower horn resembles this. The feet are all forked at the end, but not like lobsters' claws.

THE GREEN TIGER BEETLE.—The exceeding beauty of this insect is beyond all description. The upper surface of the body is a deep, dead green, changing under the microscope to a glossy gold, shot with red and green, the surface of the abdomen covered by the wings, and the entire under surface of the body, brilliant emerald green, and when the insect is on the wing it sparkles in the sun like a flying gem. Nor is this the last of its attractions, for when handled it gives forth a scent closely resembling that of the verbena. It is indeed as beautiful among insects as the tiger is among beasts, and is, perhaps, the more ferocious of the two. It runs and flies with great activity, and takes to the wing as easily as a bee or fly, and is in consequence rather difficult to capture without a net. Its jaws are long, sharp, curved like a sickle, and armed with several teeth. Its eyes are large and prominent, enabling it to see on all sides. Its length is rather more than half an inch.

THE HERCULES BEETLE is worthy of its noble name. It sometimes measures not less than five or six inches in length. The wing-sheaths are smooth, of a bluish or brownish-grey color, and sometimes nearly black. The head and limbs are coal-black. From the upper part of the breast proceeds a horn of enormous length in proportion to the size of the body. From the front of the head proceeds another strong horn about two-thirds of the length of the former.

This species is a native of South America. There great numbers are seen on the tree called *mammæa*. They rasp off the rind of the slender branches, by working nimbly round them with their horns, which are most useful instruments to them in this operation. Thus they cause the juices to flow from the tree, which they drink till they are quite intoxicated, when, like other drunkards, they become unable to manage themselves, and then fall senseless from the tree. This species, from the largeness of its size, affords an admirable example of the characters of the genus.



The Hercules Beetle.

THE STAG BEETLE is nearly three inches in length. It is of a dark-brown color, except the jaws, which are sometimes as red as coral, and which adds very much to its beauty. These resemble the horns of a *stag*, by which it is easily distinguished from other species, and on account of which it receives its name. This insect is called by the French, "*le grand cerf-volant*."

The antennæ of this species are club-shaped in the extremity divided into short comb-like leaves; the jaws are provided with teeth, and project so far beyond the head as to resemble horns, and thus give the animal somewhat of the resemblance of a stag; the two feelers, which are under the lip, are so thickly covered with hair, as to appear like tufts.

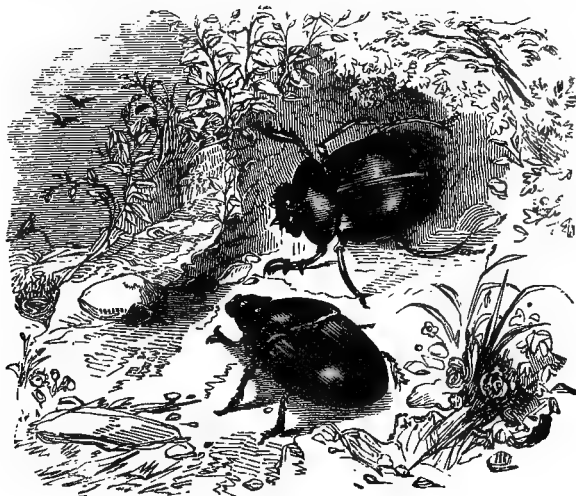
The usual residence and the favorite haunts of this species, the king, or rather giant of British insects, are hollow places in rotten and half-decayed wood, and under the bark of trees. In the south of England these insects are often found in oak and

willow-trees. They conceal themselves during the day; in the evening they open the immense cases with which the upper part of their body is covered and defended, and then unfold their beautiful wings of the finest texture, and fly abroad, and feed on those leaves which afford both enjoyment and support.

THE MUSK-BEETLE.—The beautiful beetles, of which the common Musk-Beetle is an excellent example, vary considerably in size; some being several inches in length, while some are hardly one-quarter of an inch long. The extreme length of their antennæ is the most conspicuous property, and from that peculiarity they are at once recognized.

The Musk-beetle is a large insect, common in most parts of England. Its peculiar scent, something resembling that of roses, often betrays its presence, when its green color would have kept it concealed. When touched, it emits a curious sound, not unlike that of a bat, but more resembling the faint scratching of a perpendicularly-held slate-pencil. Its larva bores deep holes in the trees, which are often quite honeycombed by them.

CARRION-BEETLES.—These insects are found chiefly both



The Carrion Beetle.

as larvæ and in a perfect state, choosing as their residence the half decayed and putrid bodies of animals. What is most repulsive and disgusting to us, is the most inviting and delightful to them. Their chief enjoyment lies in luxuriating on corruption and death. This furnishes a striking emblem of man estranged from God, avoiding the loveliness of holiness, and wallowing in the putridity of pollution and sin

THE BURYING-BEETLE. — This curious beetle derives its name from its habit of burying any small dead animal left on the surface of the ground. With such rapidity does it work, that two beetles have been known to cover up a sparrow within a few hours; and so unwearied are they, that if several Burying-beetles are placed in a vessel filled with earth, and kept constantly supplied with dead frogs, mice, etc., they will continue to bury them as long as the supply is kept up. The object of this remarkable instinct, so beneficial in its effects, is to furnish food for the young who are hatched from eggs laid in the body of the animal during its burial. In this way innumerable carcasses which would pollute the atmosphere are removed, and made beneficial to the soil.

The wing-cases and body of the burying-sylph are black; the clubs of the antennæ are red. The habits and economy of this species of insects are exceedingly striking, and cannot fail deeply to interest the reflecting and inquiring reader. The account is taken from a very intelligent writer on natural history, namely, M. Gleditsch; he was much surprised at seeing moles which were left dead upon the ground suddenly disappear; he was therefore determined to make himself acquainted with the cause of this singular occurrence. On the 25th day of the month of May, he placed a dead mole on the moist, soft earth of his garden; in two days he found it sunk to the depth of four fingers' breadth into the earth. It was in the same position in which he had placed it, and its grave corresponded exactly with the dimensions of its body, both as to length and breadth. The day following the grave was half filled up: he cautiously drew out the mole, which exhaled the most pestiferous and offensive odor, and found directly under it little holes, in which were four species of the burying-sylph

species; discovering at this time nothing but these beetles, he put them into the hollow, and they speedily hid themselves in the earth; he then replaced the mole where he found it; he placed a little soft earth over it, and left it, without looking at it for the space of six days. On the 12th of June he again took up the same carcass, which he found in the highest state of corruption, swarming with small, thick, whitish worms, which appeared evidently to be the family of the beetles. These circumstances induced him to believe that it was the beetles which had thus buried the mole, and that they had done this for the sake of a lodging for their offspring.

This same philosopher found, that in the course of fifty days, four beetles interred the bodies of *four* frogs, *three* small birds, *two* grasshoppers, and *one* mole, besides the entrails of a fish and two small pieces of the lungs of an ox.

THE PELLETT BEETLE. — This beetle is all over of a dusky black, rounder than those animals are generally found to be, and so strong, though not much larger than the common black beetle, that if one of them be put under a brass candlestick, it will cause it to move backwards and forwards, as if it were by an invisible hand, to the admiration of those who are not accustomed to the sight; but this strength is given it for much more useful purposes than those of exciting human curiosity, for there is no creature more laborious, either in seeking subsistence, or in providing a proper retreat for its young. They are endowed with sagacity to discover subsistence, by their excellent smelling, which directs them in flights to excrements just fallen from man or beast, on which they instantly drop, and fall unanimously to work in forming round balls or pellets thereof, in the middle of which they lay an egg. These pellets, in September, they convey three feet deep in the earth, where they lie till the approach of spring; when the eggs are hatched the nests burst, and the insects find their way out of the earth. They assist each other with indefatigable industry, in rolling these globular pellets to the place where they are to be buried. This they perform with the tail foremost, by raising up their hinder part, and shoving along the ball with their hind-feet.

THE DEATH-WATCH is now generally known to be merely a small beetle. Indeed it is nothing more than the creature that perforates the round holes in old "worm-eaten" furniture and wood-work. The "ticking" is produced by striking the head against the wood. If there is a Death-Watch in the room, it is easy to incite it to begin to tick, by striking with the head of a pin on the panelling. There are several insects that produce this sound, the *Anobium striatum*, *tesselatum*, and *pertinax*. The last named is so called from the pertinacity with which it simulates death if alarmed, preferring to suffer the severest treatment rather than give signs of life.

THE COCKCHAFFER needs not much description. Its larva works great mischief during the spring, as it feeds on the roots



The Cockchaffer Beetle.

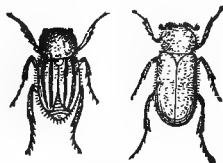
of plants, and cuts them off with its sharp sickle-like jaws. Where many of these "grubs" have been, the grass curls up, and dries like hay. One farmer actually collected eighty bushels of the grubs of the Cockchaffer on his farm. Fortunately the thrushes,

blackbirds, rooks, and many other birds are inveterate destroyers of the grubs, and devour myriads of them. It is for this purpose that these birds pull up the grass, and not to spoil or devour the herbage, as is generally supposed.

THE DOR-BEETLE is a very common insect. At the approach of evening, it may be seen whirling round in the air with a dull humming sound. The country children call it the Watchman, comparing it to a watchman going his rounds in the evening. It usually lays its eggs on a rounded mass of cow-dung, and then buries the whole mass in the ground. When caught, it pretends to be dead.

THE GROUND-BEETLE is one of the largest and most beautiful beetles. Its general color is a coppery green, and its wing-cases are ornamented with several rows of oblong raised spots. Its length is about an inch.

THE ROVE-BEETLES form an exceedingly extensive section. Some are so small as to require the assistance of the microscope to discover their shape, and others, as those represented here, are more than an inch in length. The small species are usually on the wing, and it is very amusing to see them alight, and with their flexible tails tuck their long and beautifully shaped wings under the elytra, run about for a moment, and then again take to flight. These are the creatures that cause so much annoyance by flying into one's mouth or eyes in the warm months.



Rove-Beetles.

THE GREAT ROVE-BEETLE is commonly found upon decaying animal substances. It is most formidably armed with two large, curved, sharp mandibles, the bite of which is tolerably severe; and more than once, when the creature has been recently feeding upon putrid substances, dangerous results have followed.

THE GLOW-WORM.—The male is provided with wings, and therefore has not the character of *worm*; whereas, the female generally has no wings, and is therefore confined to the earth's surface, and unable to soar above to the aërial regions. The reason



The Glow-Worm.

of the name of this insect is obvious, namely, the glowing light, which, at a certain period of the year, emanates from its body. In a dark night, these diminutive creatures shine with such brightness, as to bear some resemblance to stars.

The characters of the glow-worm are the following: the antennæ are thread-shaped; the thorax is plain, somewhat orbicular, and conceals the head: the body of the male is oblong, and somewhat flatted; the wings are shorter than the body; the head is broad, dun, and flat. The eyes are large and black: the female is a very slow-paced animal, bearing a very considerable resemblance to the caterpillar; the head is small, hard, flat, black, and sharp towards the mouth; its antennæ are short; and it has six legs of moderate length: the body is flat and composed of twelve rings; whereas, the body of the male has only five rings; it is of a dusky color, with a streak of white down the back. Though it is often seen in the daytime, it cannot be properly distinguished till night, when it cannot fail to attract the attention of the traveller by the glowing light which issues from its body. It is commonly met with under hedges, and, if taken up with care, may be

kept alive for many days upon fresh tufts of grass, all which time it will continue to shine in the dark.

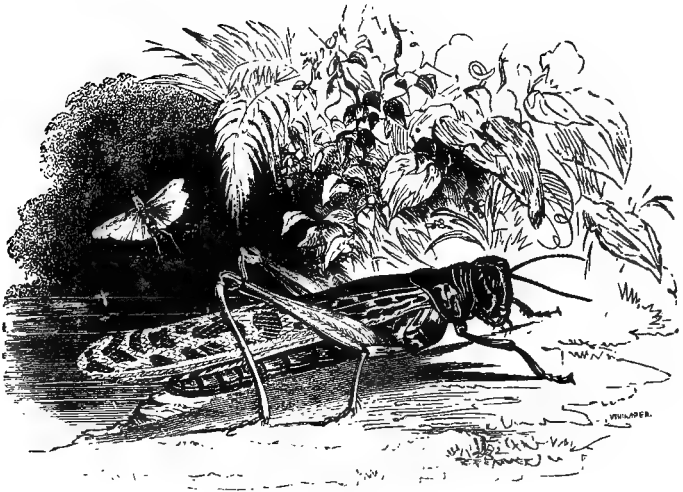
The light of this diminutive insect is so strong, that if it is confined in a thin pill-box, even though lined with paper, the light will shine through.

In the daytime this creature appears dead and sluggish, and if taken into a dark room it shows nothing of its light, unless it is turned on its back and disturbed. Soon after sunset its light and activity return. It never shines but when it is in motion.

II. — HALF-WINGED INSECTS.

These are so named because the wing cases are not of uniform texture throughout, the upper half of which is thick and opaque, while the extremities terminate with a membranous edge, resembling in substance the under pair. The wings cover the body horizontally, and do not meet in a straight line or ridge as they do in the beetles. This order of insects undergo only a demi-metamorphosis; being produced from eggs in a wingless condition. The Cicadas, however, are an exception, as they live in the ground frequently for years in the larva state. In this order are included the locust, cricket, grasshopper, cockroach, scale insect, plant-lice, and many kinds of bugs.

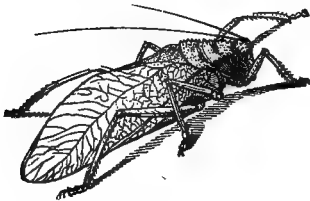
THE LOCUST. — As to size, the common brown locust is about three inches in length; its antennæ are two in number and about an inch long, and it is provided with two pairs of wings. This is necessary from its weight and the immense distance through the sky which it is sometimes destined to travel. The head and horns are brown, and also the upper side of the body and upper wings, the former, in addition, spotted with black, and the latter with dusky spots. In general form and appearance there is a considerable resemblance to the grasshopper so well known in this country. What is not the case with other insects, the males are much more numerous than the females. The males only make a noise, which is produced by a quick vibration of the wings against each other, or against their legs. It is very singular that the *nympha*, or *worm* of the locust, differs very little from the locust



The Locust.

in its perfect state. In the nymph state, it moves and eats; and there is only this difference, that the wings are not moved and expanded as in the perfect state, but are beautifully folded up in small compass, and form the appearance of two small buttons on the shoulder.

They fly in countless myriads, and where they descend, they devour every particle of green herbage—the trees are stripped of their leaves, the grass and corn is eaten to the very ground; for their jaws are so strong as to inflict a severe wound when the insect is incautiously handled. Nor does the mischief end with their life, for their dead bodies



Amboyna Locust.

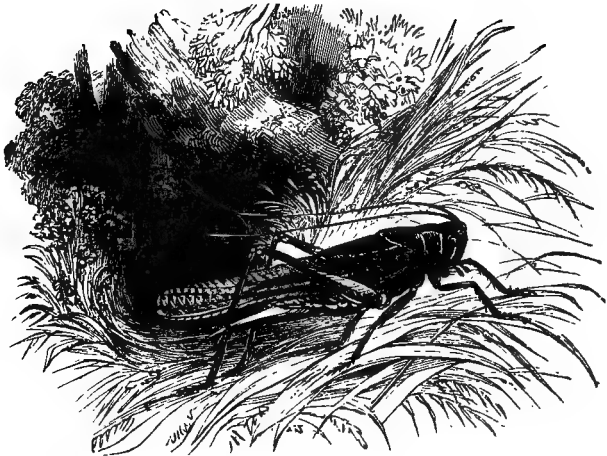
often accumulate in such numbers that the air is even dangerously infected. They infest Africa and Central Asia, but they annually make incursions to Europe, where the damage they occasion is

much less reparable than in their native lands, for there the power of vegetation is so great that a few days repair the injuries caused by them, but in Europe a whole year is required for that purpose. The following account of these creatures is extracted from Mr. Cumming's South Africa :

“On the following day I had the pleasure of beholding the first flight of locusts that I had seen since my arrival in the colony. We were standing in the middle of a plain of unlimited length, and about five miles across, when I observed them advancing. On they came like a snow-storm, flying slow and steady, about a hundred yards from the ground. I stood looking at them until the air was darkened with their masses, while the plain on which we stood became densely covered with them. Far as my eye could reach, east, west, north, and south, they stretched in one unbroken cloud; and more than an hour elapsed before their devastating legions had swept by. . . .

“Locusts afford fattening and wholesome food to man, birds, and all sorts of beasts; cows and horses, lions, jackals, hyænas, antelopes, elephants, etc., devour them. We met a party of Batlapis carrying heavy burdens of them on their backs. Our hungry dogs made a fine feast on them. The cold frosty night had rendered them unable to take wing until the sun should restore their powers. As it was difficult to obtain sufficient food for my dogs, I and Isaac took a large blanket, which we spread under a bush, whose branches were bent to the ground with the mass of locusts which covered it, and having shaken the branches, in an instant I had more locusts than I could carry on my back; these we roasted for ourselves and our dogs.”

THE GRASSHOPPER.—From the vast numbers that are constantly seen in our meadows during the summer months, this insect is very generally known. Its color, shape, habits, and voice, are very familiar to every observer of nature. In its color it resembles green leaves. Indeed, the green is vivid, glossy, and beautiful, resembling the most lively vegetable green. There is a line of brown which streaks the back, and two pale lines under the belly and behind the legs.



The Grasshopper.

This insect may be divided into three parts; the head, the corslet, and the belly. The head is long, pointing down to the earth. Every one is struck with the resemblance which it bears to the head of a horse. Its mouth is covered by something similar to a buckler; this juts over it; is armed with teeth of a brown color and hooked at the points. The tongue is large, reddish, and fixed to the upper jaw. The antennæ are long and tapering to a point. The eyes are like two black spots, and very prominent; the corslet is elevated, narrow, and armed above and below by two serrated spines. The back is defended by a strong buckler. To this the legs are firmly bound. What is very singular, round these muscles are seen the vessels by which the animal breathes, as white as snow. It is provided with four wings. The hinder wings are much finer and more expansive than the foremost, and are chiefly employed in its flight through the air.

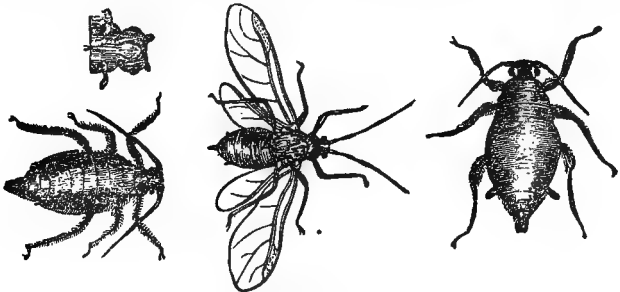
A short time after the wings are brought to maturity, the grasshopper fills the meadows with its notes. Like the music of birds, it is a call to courtship. The male only is vocal. It is toward the latter end of autumn the female deposits her eggs, sometimes

amounting to the amazing number of one hundred and fifty. She is provided with an instrument resembling a two-edged sword, by which she pierces the earth as deep as she can, and thus prepares a suitable place for depositing her eggs. This operation she survives only for a short time. On the approach of winter she dries up, and then dies like a shrivelled old man, with complete decay.

THE CRICKET is so well known as not to need description. One species, however, the Mole Cricket, which is the pest of farmers and gardeners, burrows in the ground, and depositing from two hundred to four hundred eggs at a time, may require mention. When full grown, the Mole Cricket measures nearly two inches in length, and four lines in breadth. Its color is dark brown; head oval, small and longish; two bristle-shaped and strong feelers; thorax covered with fine woolly hair; wings very broad and triangular, when expanded; abdomen soft; the two fore feet proportionally short, but broad and strong, adapted to dig in the earth.

THE COCKROACH (*Blatta orientalis*) belongs to the family Blattidæ. It was originally brought from abroad, and has completely domesticated itself, just as the brown rat has done, so that few houses are free from it.

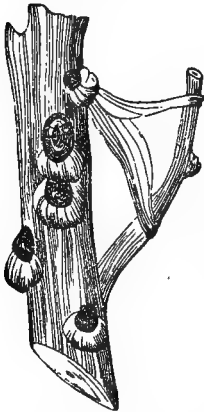
PLANT LICE. — These insects are usually found upon the leaves and stems of plants; and the weaker the leaves and buds



Plant Lice.

are, these insects swarm upon them in greater abundance. Some plants are covered over with them, though they are not the cause

of the plant's weakness, but the sign; however, by wounding and sucking the leaf, they increase the disease. They generally assume their color from the plant on which they reside. Those that feed upon pot-herbs and plum-trees, are of an ash-color, only they are greenish when they are young: those that belong to the alder and cherry-tree are black; as also those upon beans, and some other plants: those on the leaves of apples and rose-trees are white, but as they leap, like grasshoppers, some place them in the number



The Scale Insect.

of the flea kind. The most uncommon color is reddish, and lice of this sort may be found on the leaves of tansy; and their juice, when rubbed in the hands, tinges them with no disagreeable red. All these live upon their respective plant, and are often engendered within the very substance of the leaf.

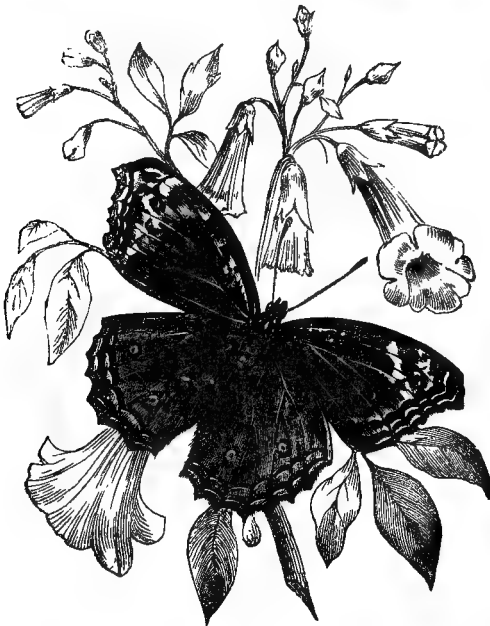
THE SCALE INSECT is also very injurious to plants, living on the sap, and depositing its eggs on the bark. The cochineal of commerce is a scale insect. The vine-scale insect forms a longish, marbled-brown scale. In old age, the scale becomes blackish-brown, hemispherical and wrinkled. The eggs, which are laid under the body of the female, are covered with long white wool. They are found on vines, particularly in gardens.

III.—SCALE-WINGED INSECTS.

This order is divided into butterflies and moths; the first of which fly in the daytime, and the latter only at night. They are all provided with four wings, and all pass through a complete series of metamorphoses. Their larvæ, known under the name of worms or caterpillars, spin webs for their covering while in the chrysalis state. The silk of commerce is prepared from the web spun by the silkworm for its residence during this dormant state of existence.



The Silkworm.



The Butterfly.

THE PAPILO, or *Butterfly*, in zoology, is a genus of insects belonging to the order of *lepidoptera*. It has four wings, imbricated with a kind of downy scales; the tongue is convoluted in a spiral form, and the body is covered with the finest hair. There are two hundred and seventy-three species, principally distinguished by the color of their wings.

The caterpillar state is that through which every butterfly must pass before it arrives at its perfection and beauty. What a difference betwixt the creeping, loathsome caterpillar, which many

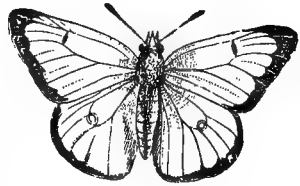


Caterpillars.

shudder even to touch, and the butterfly, with its lovely expanded wings, adorned with colors which almost vie with those of the rainbow!

THE LARGE WHITE BUTTERFLY is a species with which we are well acquainted, and which even attracts the attention of little children. How often do we see them highly amused, pursuing in the meadow those beautifully-adorned insects! In the

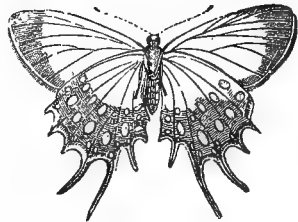
caterpillar-state it is an insect very destructive to cabbages and cauliflower-plants. What a difference betwixt its appearance as a loathsome worm and its future appearance, when provided with wings, and in some measure an inhabitant of the aerial regions!



White Butterfly.

THE PURPLE EMPEROR is the most beautiful of all the butterflies met with in Europe: it is not only the most lovely, but in its manners most interesting. Mr Maneworth, a celebrated naturalist, says, "That in its manners, as well as in the varying lustre of its purple plumes, it possesses the strongest claim to our attention. He commences his aerial movements from ten till twelve o'clock in the morning, and at noon reaches his loftiest elevation."

THE SWALLOW-TAILED BUTTERFLY moves with exceeding rapidity, nearly in a straight line, and is very difficult to capture. The color of the wings is black, variegated most beautifully with yellow markings, and near the extremity of each hinder wing is a circular red spot, surmounted by a crescent of blue, and the whole surrounded by a black ring



Swallow-Tailed Butterfly.

MOTHS. — The antennæ are cetaceous, that is, bristly, gradually lessening from base to tip: when sitting the wings are deflex; and its flight is nocturnal. What the owl is among birds, the moth is among insects: it is a night-insect, carrying on its pursuits, and exercising all its activity amid the gloom of darkness. This genus, containing a vast number of species, is divided into assortments, according to the different habits of the animal. So numerous is the variety of moths, that there are actually four hundred and sixty species.

All the creatures of these numerous species are quiet by



Moths.

day, remaining fixed to the stalks or leaves of plants. As soon as night approaches they revive from their daily slumbers, and may be seen flying about in all their sportive liveliness. This disposition is very deeply implanted in their nature. It even shows itself when they are confined in boxes. During the day they are dormant and motionless, without changing their place in the slightest degree; but as soon as the sun is about setting, they begin to awake, and flutter about and fly as much as the limits of their narrow prison will allow.

The largest and most splendid of all the moths is the *phalæna atlas*. It is a magnificent insect. When its wings are extended, it is in measurement no less than eight inches and a half. It is beautified with a proportionate splendor of ornamental coloring. The ground-color is of a fine, deep, orange-brown. In the middle of each wing there is a large transparent spot, resembling a piece

of Muscovy tale : each of these transparent spots is followed by a black border ; and across all the wings run lighter and darker bars, exhibiting a very fine assortment of varying shades. The lower wings are edged with a border of black spots on a pale buff-colored ground. The antennæ have a most elegant appearance. This *kingly moth* is a native of both the Indies, occasionally differing, however, in size and color.

There is a very beautiful specimen of moth belonging to the assortment *geometræ*. Towards the middle of summer it is often seen upon the elder. It is called *phalæna sambucaria*. It is of a pale sulphur color ; the wings are angular, and marked by narrow, transverse lines. It proceeds from a green caterpillar, and walks in a very peculiar manner, by raising up the body at each progressive movement into the form of an arch, or loop, the two extremities nearly meeting each other. In June or July it comes out a beautiful moth from a black chrysalis.

THE DEATH'S-HEAD MOTH is the largest of the British Lepidoptera, as it not unfrequently measures nearly six inches across the wings. Its rather ominous name is derived from the singular marking in the thorax, which does not require much imagination to represent a skull and cross-bones.

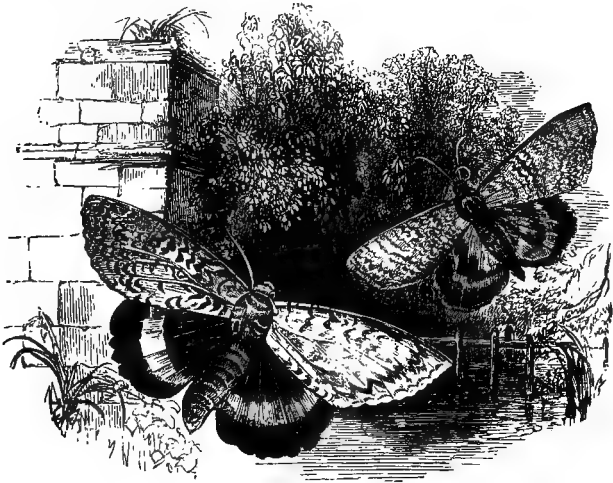
Some naturalists have asserted that this moth makes its way into bee-hives, and robs the inhabitants of their honey, disarming their resentment by a curious squeaking noise which it has the power of producing.

The uneducated rustics have a great horror of this insect, and consider its appearance as a most disastrous omen. In a small village removed from the influence of railways, on one Sunday morning, as the inhabitants were going through the churchyard, a Death's-head Moth appeared on the path. Every one recoiled in dismay, and no one dared approach the dreaded object. Sundry heads were shaken at the evil omen, and various prophetic remarks made. At last, the blacksmith summoned up courage, and with a great jump, came down on the unfortunate moth, and happily destroyed it. The people were in blissful ignorance that as there were several fields near planted with potatoes, on which vegetable

the caterpillar generally feeds, there were probably a few hundred of Death's-head Moths in the vicinity.

In common with many other nocturnal insects, the eyes of the Death's-head Moth shine at night like two stars, which adds considerably to the terror inspired by its appearance.

THE BROWN-TAILED MOTHS emerge from the chrysalis about the beginning of July. Then they are found flying about



The Brown-tailed Moth.

slowly in the evening, and depositing their eggs on the foliage of those favorite trees mentioned before. The caterpillars are hatched early in the autumn. They no sooner quit the egg, than they commence spinning a web; when they have completed a small web, they proceed to feed on the foliage, by eating the upper part of the leaf, and leaving the under part untouched. This work of destruction they prosecute with remarkable order. Every day they proceed in the enlargement of their web, which affords them protection in bad weather and at night. If they are not checked in operations, they succeed in doing very serious injury; but if gar-

deners are diligent in the use of the pruning-knife, or a sharp hook, or a pair of shears, for separating their nests from the shrubs and plants, they will effectually put a stop to their ravages. No other method will serve the purpose.

THE *SERATELLA* MOTH is a small insect, which, like the owl, roams abroad during the night. It is furnished with its share of ornament. Its color is brown, and the upper wings, which are beautifully fringed, are marked with numerous black dots and stripes. The under wings are much smaller than the upper, and fringed at the edge. The hind legs are nearly twice the length of the body, and fringed at their articulations, or joints.

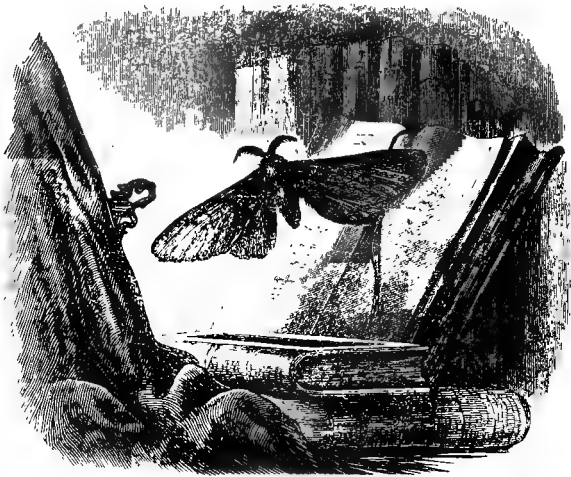
The eggs from which the larvæ, or worms, of this moth come forth, are generally attached to the leaves of the pear-tree, but more seldom to those of the apple and plum in the month of May. These are succeeded by small, downy, fawn-colored cylinders; they contain a small yellowish caterpillar with a black head; when its cell becomes too small, it is guided by instinct to divide it lengthways, by means of its jaws, and then, very nicely and completely, closes up the opening with new and suitable materials. The activity of this insect in making for itself a comfortable habitation, should teach us to seek after a title to a comfortable and secure abode beyond the skies, even a house not made with hands, eternal in the heavens.

The mode which this caterpillar adopts in feeding is singular. It does not quit its cell while it feeds; the cell is fixed to the leaf by silken threads; the insect has the power of stretching out its body to a considerable extent; it gradually devours all within its reach, forming a complete circle; when this is effected, it cuts the threads which attach the cell to the spot, and crawls to another part of the leaf, to which it fixes its little humble abode. The period of its caterpillar life continues fourteen days from the time it was hatched from the egg; then it becomes a torpid, motionless chrysalis, in which state it continues about ten days.

It is in the months of May or June these moths come forth in immense swarms. The females only deposit one egg at once and seldom more than one on the same leaf. These insects are

small, yet, from their numbers and voracious appetite, they occasionally commit great devastation in our orchards. In some years the leaves of pear-trees have been completely destroyed, and in the summer season have been as completely denuded and stripped as in the middle of winter.

THE CLOTHES MOTH is of a white, shining, silvery color. When the caterpillar-moth-worm comes from the egg, it imme-



The Clothes Moth.

diately commences preparing a suitable covering for its feeble frame. It spins a coating of silk, which is extracted from its own body, to which covering it very ingeniously attaches little pieces of nap, which it cuts with its curiously formed jaws, which resemble a pair of scissors. Unless it is compelled by the most urgent necessity, it never quits its warm, comfortable habitation. When it wishes to feed, it puts out its head at either end of its little mansion, as best suits its convenience. As its body enlarges, it adds to the size of its abode, and all the additions partake of the color of the different substances out of which they are formed

It has not only the art of lengthening, but also of widening, its little tenement. It actually makes a slit from end to end, which it fills up, and makes it as complete and secure as it was before the opening was made. Three weeks after it becomes a chrysalis, it comes forth a moth of silvery grey color.

CHAPTER XVI.

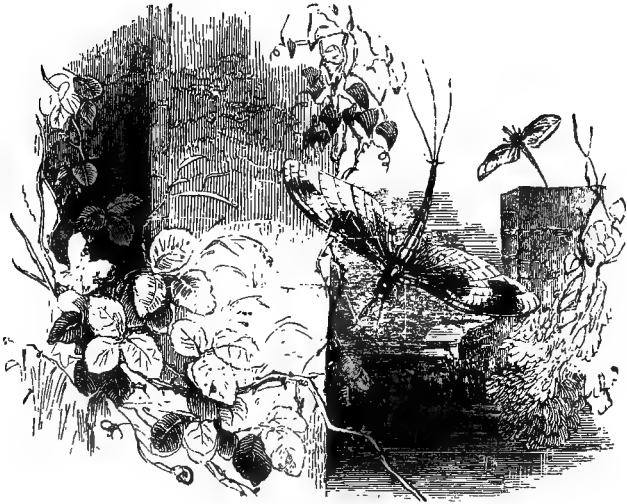
DIVISION II.—INVERTEBRATES.

CLASS V.—INSECTS.

ORDER IV.—NERVE-WINGED INSECTS.

THIS order also has four wings, membranous, naked, and so interspersed with delicate veins, that they have the appearance of a beautiful network. The tail is not furnished with a sting, but that of the male has frequently a kind of forceps or pincers. They comprise the Ephemera, the Dragon Fly, the Ant-lion, White Ants, etc. Some undergo a complete metamorphosis, others only a partial change of form.

EPHEMERÆ, or DAY-FLIES.—It is remarkable, that the *larvæ* of the ephemeræ flies live in the waters for the space of three years. When the regular time of their change arrives, it is effected in a few moments. Then it rises to the surface of the water, and becomes a winged chrysalis. It flies to the nearest resting-place, and in a moment it undergoes a second change, and becomes a perfect ephemeræ. In this state it continues no longer than half an hour. It flutters and dances during its short existence in the sunbeams, and after enjoying a few minutes of gaiety and pleasure, its existence is brought to a close.



Ephemera, or Day-Flies.

THE DRAGON-FLY. — There are twenty-one species, chiefly distinguished by their color. The characters are the following : — The mouth is furnished with jaws ; the feelers are shorter than the breast ; and the tail of the male terminates in a kind of hooked forceps. All the species are provided with two very large and reticulated eyes, covering the whole surface of the head. They fly very swiftly, and prey while upon the wing, clearing the air of innumerable little flies. Their voracious appetite, and the multitude of lesser winged insects which they destroy and devour, fully entitle them to the name vulgarly, but correctly, given to them, *dragon-fly*. In their own insect grade, they are indeed *dragons*. In the months of August and September they are found in our fields and gardens, especially near places where there are stagnant waters. The eggs from which they are produced are deposited in the waters, where they are hatched by the warmth of the temperature, and from which they come fully formed and provided with all their furious and voracious instincts. The great ones usually live all their time about waters ; but the smaller among



The Dragon-Fly.

hedges, and the smallest of all frequent gardens. The smaller kind often settle upon bushes, or upon the ground; but the larger ones are almost always upon the wing, so that it is very difficult to take them. The eyes of the dragon-fly are remarkably curious, and by means of the microscope, present an astonishing assemblage of wonders.

The colors with which this species is adorned are most brilliant and various, consisting of green, blue, crimson, scarlet, and white. In some cases all these colors are beautifully blended in the same individual. The wings are of the most delicate texture, admit of very considerable expansion, and cannot be looked upon by the careful student of God's works without admiration and delight.

They are exceedingly ravenous; they fall with the greatest fury on all their fellow-insects, and indiscriminately devour them. Their tail is cloven, which has led many to believe they are provided with a sting. Hence, too, they have received the name of *horse-stingers*.

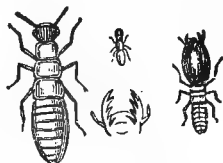
The great dragon-fly is remarkable for the celerity and vigor of its flight. On one occasion a great dragon-fly was seen gently flying near a pond in search of its prey, when, on seeing a butterfly, it suddenly caught it, and then sat down composedly on a twig and eat it piecemeal.

THE CADDIS-FLY.—This fly is well known to every angler both in its larva and in its perfect state. The larva is a soft white worm, of which fishes are exceedingly fond, and it therefore requires some means of defence. It accordingly actually makes for itself a movable house of sand, small stones, straws, bits of shells, or even small living shells, in which it lives in perfect security, and crawls about in search of food, dragging its house after it. When it is about to become a pupa, it spins a strong silk grating over the entrance of its case, so that the water necessary for its respiration can pass through, but at the same time all enemies are kept out. When the time for its change has arrived, the pupa bites through the grating, rises to the surface, and crawls out of the reach of the water, which would soon be fatal to it. The skin then splits down the back, and the perfect insect emerges.

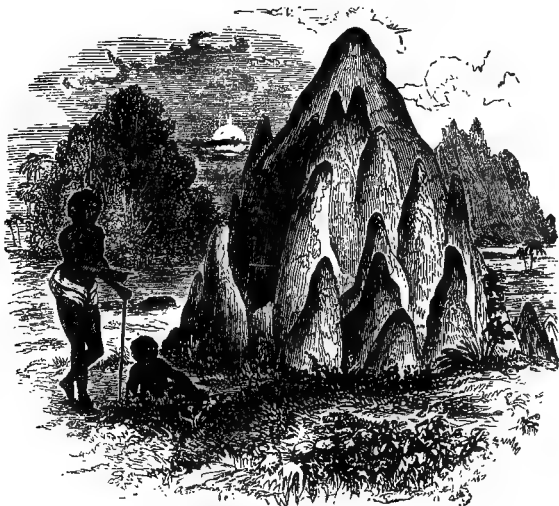
THE ANT-LION.—This insect, in its perfect form, although it is very elegant, exhibits no peculiarity worthy of notice, but in its larva state its habits are so extraordinary as to have excited general attention. As it is slow and awkward in its movements, it has recourse to stratagem for capturing the agile insects on which it feeds. Choosing a light sandy soil, it digs for itself a conical pit, at the bottom of which it conceals itself, leaving only its jaws exposed. When an unwary insect approaches too near the edge of the pit, the sand gives way, and down rolls the insect into the very teeth of the concealed Ant-lion, who instantly pierces its prey with its calliper-shaped fangs, and sucks out its juices through the jaws, which are hollow. Should, however, the Ant-lion miss its prey,

and the insect endeavor to escape, its captor instantly makes such a turmoil by tossing up the sand with its closed jaws, and covering each side of the pit with the moving grains, that the insect is tolerably certain to be brought down to the bottom, and is seized by the Ant-lion, who immediately drags it below the sand. When the insect is very strong and struggles hard to escape, the Ant-lion shakes it about as a dog does a rat, and beats it against the ground until it is disabled.

THE TERMITES, or *White Ants*, as they are very erroneously called, belong to this order. These insects live in large societies, and build edifices, sometimes of enormous size, and almost as hard as stone. Twelve feet in height is quite common, so that were we to compare our works with theirs, St. Peter's in Rome, and St. Paul's in London, fall infinitely short of the edifices constructed by these little creatures. The common *Termes bellicosus*, or warlike Termite, inhabits Africa. Not only does it build these



White Ants.



Habitations of White Ants.

houses, but runs galleries underground, as, curiously enough, although blind, it always works either at night or in darkness. In each house or community, there are five different kinds of Termites: 1. The single male, or king, whose life is very short; 2. The single female or queen: these are the perfect insects, and have had wings, but have lost them soon after their admission into their cell; they also have eyes; 3. The soldiers or fighting men: these possess large jaws, do no work, but repel adversaries and watch as sentinels; 4. The pupæ, who resemble the workers, except that they possess the rudiments of wings; and, 5. The larvæ, or workers. These do all the *work*, i. e. they collect food, attend to the queen, and watch over the eggs and young, and build and repair their castle. These are more numerous than all the other kinds.

On the approach of the rainy season, the pupæ obtain wings and issue forth in swarms. Few, however, survive. Myriads are devoured by birds, reptiles, and even by man; and many are carried out to sea, and perish there. Those that do escape are speedily found by the laborers, who enclose a pair in a clay cell from which they never emerge. The male soon dies, but the female, after rapidly increasing to nearly three inches in length and one in breadth, continues to lay eggs unceasingly for a very long time. This cell becomes the nucleus of the hive, and round it all the other cells and galleries are built.

These insects are terribly destructive, as they eat through wooden beams, furniture, etc., leaving only a thin shell, which is broken down with the least extra weight, and many are the occasions when an unsuspecting individual, on seating himself on an apparently sound sofa or chair, finds himself, like Belzoni in the Pyramid, reposing among a heap of dust and splinters.

ORDER V. — MEMBRANE-WINGED INSECTS.

These have four naked membranaceous wings, but they have not that delicate, netted structure, which belongs to the last order. The bodies of the females are terminated by a borer or perforator, or by a sting. These insects all undergo a complete metamorphosis. The ant, wasp, and bee, belong to this order

They live in societies. In some of the tribes of insects of this kind, there is, beside the males and females, a third sort, called neuters, as among the ants and bees. Sometimes the neuter, and sometimes the female, is without wings, and sometimes without a sting.

BEES. — Everything connected with the history of bees is full of interest, calculated to excite our wonder, and to promote



Bees.

our improvement. When they begin to work in their hives, they divide themselves into four companies. One company roves in the fields, and provides materials for the structure of the honeycomb; another company employs the wax provided by the first, and lays out the bottom and partition of the cells; a third company is engaged in making the inside smooth from the corners and the angles; and the fourth company brings food for the rest, or relieves those who return with their respective loads. What is surprising, the companies change their employments by mutual consent, and

perform the different parts most amicably by turns. Such is their diligence, that in one day they can build and complete cells for three thousand bees.

Observe and admire their sagacity in the formation of their cells. As the compass is very limited within which their cells are formed, they use the smallest possible quantity of materials, so



Queen Bee.



Working Bee.



Drone.

that there is no unnecessary thickness in the partition-walls. Their edifice too is so formed, that they have the greatest degree of accommodation in the smallest space. And they employ the spot in such a way that no room whatever is lost. The shape of the cells is hexagonal, that is, six equal sides. By this shape there is an economy of wax, as the partition of one cell makes the partition of the next. Thus no material is lost. Then these cells joined together, there is no loss of space, as there is no void. And there is, by this shape, greater capacity or room within the cell, than by any other form. The mouth of each cell is made considerably thicker and stronger than any other part, as it is most exposed.

The combs lie parallel to each other. Between each of them there is a space left, which serves as a street, and is of sufficient breadth to allow two bees to pass each other without inconvenience. There are also holes which go quite through the combs, and serve as lanes for the bees to pass from one comb to another, without being obliged to go a great way about.

The royal cells are much larger than any others, and are of an oval shape. When a worker larva is placed in a royal cell, and fed in a royal manner, it imbibes the principles of royalty, and becomes a queen accordingly. This practice is adopted if the queen bee should die and there be no other queen to take her place.

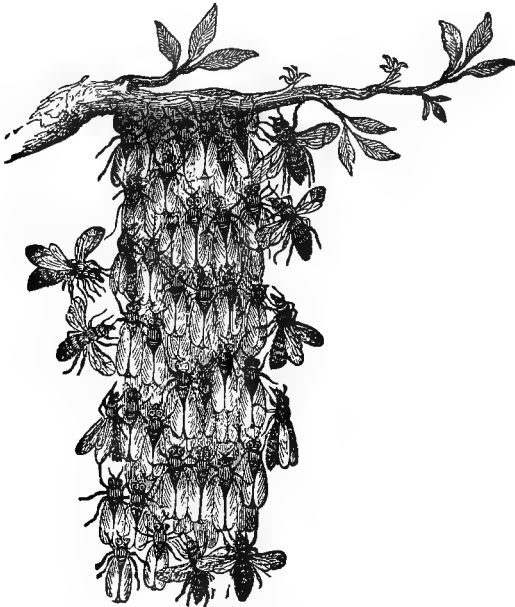
The Queen Bee is lady páramount in her own hive, and suffers no other queen to divide rule with her. Should a strange queen gain admittance, there is a battle at once, which ceases not until one has been destroyed.

At the swarming time, the old queen is sadly put out by the encroachments of various young queens, who each wish for the throne.

and at last is so agitated that she rushes out of the hive, attended by a large body of subjects, and thus the



Sting of Bee, highly magnified.



Bees Swarming.

first swarm is formed. In seven or eight days, the queen next in age also departs, taking with her another supply of subjects. When

all the swarms have left the original hive, the remaining queens fight until one gains the throne.

The old method of destroying bees for the sake of the honey was not only cruel but wasteful, as by burning some dry "puff-ball" the bees are stupefied, and shortly return to consciousness. The employment of a "cap" on the hive is an excellent plan, as the bees deposit honey alone in these caps, without any admixture of grubs or bee-bread. Extra hives at the side, with a communication from the original hive, are also useful.

The queen bee lays about eighteen thousand eggs. Of these about eight hundred are males or drones, and four or five queens, the remainder being workers.

WASPS.—The mouth of the wasp has maxillæ without any proboscis, and thus differing from the bee, which is provided with a proboscis, which it can introduce into the bosom of flowers and extract the delicious nectar. The upper wings of the wasp are plicated; the sting is pointed and concealed; the eyes are lunar; and the body naked and smooth. It is said there are twenty-eight species.

Of the common wasps there are three sorts: this is no doubt applicable to the other species. There are the *queens*, or females, the *males*, and the common laboring wasps, called mules, which are neither male nor female, and therefore barren. The *queens* are much larger than the other wasps, and the great size of their body corresponds to the prodigious quantity of eggs with which they are charged. The males are less than the queens, and have no stings, with which both the queens and the mules are furnished. In one nest there are two or three hundred males, and as many females; but of course the number depends on the size of the nest.

The *mules* are a very serviceable part of the community. They are the laborers and the domestic servants belonging to the nest. Even *wasps* can furnish an example of a well-regulated domestic establishment. These *mules* procure materials for the nest, and make use of the materials for its structure. They also furnish the other wasps and their young with *provision*. How



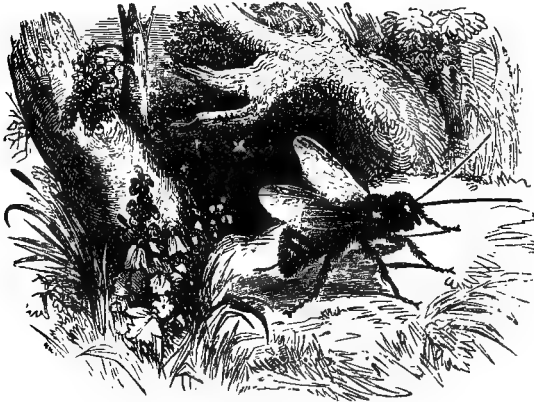
Common Wasp.

amazing to think of the instinct by which they are guided in these necessary and useful operations!

A wasp's nest is commonly round, and made of a substance resembling fine paper; the common covering consists of several leaves, or layers; it is pierced by two holes at a distance; the one is used for going in, and the other for going out; the cells are arranged in combs, after the manner of bees.

HORNETS.—The dreaded Hornet is usually found in woods, where it builds its nest in the hollows of trees. A deserted hut is a favorite spot, and when occupied by a full nest of hornets, is not particularly safe to enter, as the sting of this insect is peculiarly

severe. "In 1847," says Mr. Wood, "while on an entomological excursion in Bagley Wood, I saw five hornets sitting in a row, gnawing a dead branch. I was rather fearful of disturbing them,



The Hornet.

but at the same time, they were much wanted for a museum. They were all secured by tapping each in succession with a twig, and receiving it in my net as it flew off. Each bit a hole in the net, which had to be repaired before it could be used again with safety."

THE WOOD-ANT is the largest of the American or European species. It is found principally in woods, and builds a large nest, which looks like a hillock of sand and earth, intermixed with bits of stick, leaves, etc. The interior of this hill is chambered out into a variety of apartments, and is traversed by passages. The so-called ants' eggs are not eggs at all, but the *pupa* cases of the insect; and if opened, the perfect insect is seen curled up inside. In the autumn, the ants burst forth by thousands, and may be seen hovering in clouds above the nest. Their beautiful wings do not last long, for when a female ant escapes, and founds an infant colony, her wings are soon lost. Few *do* escape, as the birds find these living clouds a most agreeable and plentiful repast.

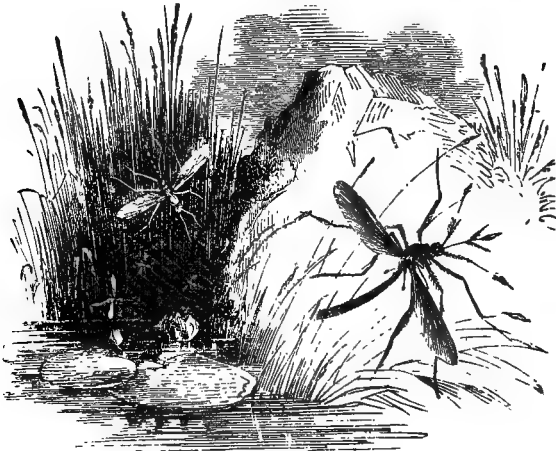
Ants do not, as has been so frequently said, lay up stores of corn for the winter, for they are in a state of torpidity during the cold months, and require no food. Moreover, an ant would find as much difficulty in eating or digesting a grain of corn as we should in devouring a truss of straw.

THE ICHNEUMONS form a very large section. They are most useful to mankind, as one ichneumon will destroy more caterpillars than a man could kill in his lifetime. They do not, as most other insects, deposit their eggs upon vegetable or dead animal substances, but they actually bore holes in other insects while they are still in the larva state, and leave the eggs to hatch in their living receptacle. The most common ichneumon is a very small insect, not so large as an ordinary gnat. This little creature may be seen searching for caterpillars. It generally selects the common cabbage caterpillar, and sitting upon it, pierces with its sting, or ovipositor as it is called, the skin of the caterpillar, and deposits an egg. After repeating this operation many times, it flies off, and the caterpillar proceeds as before in the great business of its life, that is, eating, and continues in apparently perfect health until the time for its change into the chrysalis state occurs. The good condition of it, however, is merely deception, for the offspring of the little ichneumon have all this while been silently increasing in size, and feeding on the fat, etc., of the caterpillar, but cautiously avoiding any vital part, so that the plump appearance of the caterpillar is merely produced by the young ichneumons lying snugly under the skin. Just as the caterpillar commences its change, out come all the ichneumons, looking like little white maggots, and immediately each spins for itself a yellow oval case, frequently enveloping the form of the now emaciated caterpillar. In a few days a little lid on the top of each case is pushed open, and the perfect flies issue forth, and immediately commence their own work of destruction.

ORDER VI. — TWO-WINGED INSECTS.

Insects of this order have only two wings, but beneath them are balancers or poisers. Their mouths are frequently armed with lancets and suckers, by means of which they pierce the skin of animals, and feed upon their blood. To this order belong some of the most troublesome and annoying of the whole animal creation, viz., the various species of gnat and gad-fly, the mosquito, the common house-fly, the horse-fly, etc. They attack both men and other animals, and are found in almost every part of the globe. Their larvæ are deposited in the skins and intestines of brute animals, sometimes even in those of men, in putrid meat, in cheese, mud, and water. They pass through a complete metamorphosis.

THE GNAT. — The mouth is furnished with a fleshy proboscis and two lateral lips. There are no less than one hundred



The Gnat.

and twenty-nine species, which are chiefly distinguished by their feelers.

There is no species of insects so troublesome to man as the gnat. Others give occasional annoyance, like the wasp; but the gnats thirst for human blood, and follow us in companies with the most persevering constancy, till they have succeeded in satiating their desires. In many marshy places in our country they swarm in myriads. There, the legs and arms of individuals are swelled to an enormous size, by the bitings of these voracious and insolent insects. In many other countries they are much more troublesome than in ours.

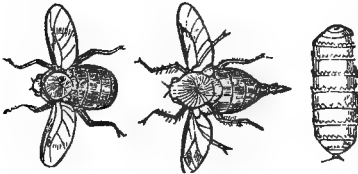
There is something very singular in the trunk of the gnat, or that instrument with which it is provided, and by which it inflicts such pain on others, and obtains so much gratification for itself. This instrument is a kind of sheath, which contains several *piercers*. These issue, at the pleasure of the insect, from a very narrow aperture. They are darted, in a moment, into the flesh of the object on which it lights. Gnats are careful in the choice of the particular place on the skin where they inflict the wound. It will try several before it sends out its *cruel piercers*. The place must have two properties: first, it must be easily pierced; and, secondly, there must be a vessel underneath containing as much blood as it may have occasion to suck, to satisfy its craving desires.

The wings of a gnat are a very curious structure, and worthy of attentive observation. By a close examination it is found that these wings are covered with what seems at first a beautifully-colored powder. By the help of the microscope, this powder consists of regularly organized bodies resembling scales and feathers. Though they are bestowed much more sparingly than upon the butterfly, yet they are arranged with the utmost regularity.

THE GADFLY has, from the most ancient times, been known as the terror of the herd. At the sound of its approach, the cattle are driven almost mad with terror. The young gadflies are nourished under the skin, where they remain until they are fit to pass into the pupa state, when they bury themselves in the ground, and, after a few days spent under the earth, issue forth in their perfect state.

HORSE-BOT.—The Horse-bot is the larva of a fly resembling a humble-bee, with two wings. The female lays her eggs on the

shoulders, manes, and knees of horses, which they lick off and swallow. They hatch in the stomach, feed in the larva state all the winter on the mucilage, and in spring are found in the horse's stomach, sometimes in great



Horse-bot.

numbers. They resemble, in size and form, a date-stone, having two hooks at the fore end, with which they adhere to the inner coat of the stomach, often penetrating from one-fourth to half an inch deep into the white insensible tissue, and become as if distorted by it. If numerous, they cause violent pain; and, as they irritate the stomach, and extract a great deal of nourishment from the animal, they necessarily injure digestion.

FLIES.—Of the *Musca*, or *Flies*, there are one hundred and twenty-nine species, chiefly distinguished by the peculiarity of their feelers.



The Large Black Fly.

The scientific name of the large black fly is *Musca Chamelion*. It proceeds from an aquatic larva, that is, larva which exists in the water in its embryo state. The size of the larva is considerable, measuring two inches and a half in length. The shape is flattened and the color brown. This larva is common in stagnant waters during the summer months. It passes into the chrysalis state without casting its skin, which dries over it, so as to preserve the original appearance of the animal, only in a more contracted state.

ORDER VII.—WINGLESS INSECTS.

A great variety of insects that have no wings are included in this order. Among them are found the flea, the millipede, the louse, the spider, the scorpion, etc.

THE FLEA.—The strength and agility of this curious but annoying little insect is perfectly wonderful. Many of my readers have doubtless seen the exhibition of the Industrious Fleas, who drew little carriages, and carried comparatively heavy weights with the greatest ease. The apparatus with which it extracts the blood of its victims is very curious, and forms a beautiful object under a microscope of low power. Its leap is tremendous in proportion to its size. This property it enjoys in common with many other insects, among which the common Grasshopper, the Frog-hopper, and the Halcias, or Turnip-flies, are conspicuous. In all these insects the hinder pair of legs are very long and powerful.



Flea.

THE MILLIPEDE.—Those of the East Indies, where they grow to the largest size, are about six inches long, of a ruddy color, and as thick as a man's finger. They consist of many joints, and from each joint is a leg on each side: they are covered with hair, and seem to have no eyes; but there are two feelers on the head, which they make use of to find out the way they are to pass: the head is very round, with two small sharp teeth, with which they inflict wounds that are very painful and dangerous. A sailor that was bit by one on board a ship, felt an excessive

pain, and his life was supposed to be in danger; however, he recovered by the application of roasted onions to the part, and was soon quite well. Of this animal there are different kinds; some living, like worms, in holes in the earth; others under stones and among rotten wood; so that nothing is more dangerous than removing those substances, in the places where they breed.

THE LOUSE has neither beak, teeth, nor any kind of mouth, as Dr. Hooke described it, for the entrance into the gullet is absolutely closed. In the place of all these, it has a proboscis or trunk, or, as it may be otherwise called, a pointed, hollow sucker, with which it pierces the skin, and sucks the human blood, taking that for food only. The stomach is lodged partly in the breast and back; but the greatest portion of it is in the abdomen. When swollen with blood, it appears of a dark brown color, which is visible through the skin, and is either a faint red, or a full or bright brown, as the contents of the stomach are more or less changed. When it is empty it is colorless; but when filled it is plainly discernible, and its motion seems very extraordinary. It then appears working with very strong agitations, and somewhat resembles an animal within an animal. Superficial observers are apt to take this for the pulsation of the heart; but if the animal be observed when it is sucking, it will then be found that the food takes a direct passage from the trunk to the stomach, where the remainder of the old aliment will be seen mixing with the new, and agitated up and down on every side.

If this animal be kept from food two or three days, and then placed on the back of the hand, or any soft part of the body, it will immediately seek for food; which it will the more readily find, if the hand be rubbed till it grows red. The animal then turns its head, which lies between the two fore legs, to the skin, and diligently searches for some pore. When found, it fixes the trunk therein, and soon the microscope discovers the blood ascending through the head, in a very rapid and even frightful stream. The louse has, at that time, sufficient appetite to feed in any posture—it is then seen sucking, with its head downward and its tail elevated. If, during this operation, the skin be drawn

tight, the trunk is bound fast, and the animal is incapable of disengaging itself; but it more frequently suffers from its gluttony, since it gorges to such a degree that it is crushed to pieces by the slightest impression.

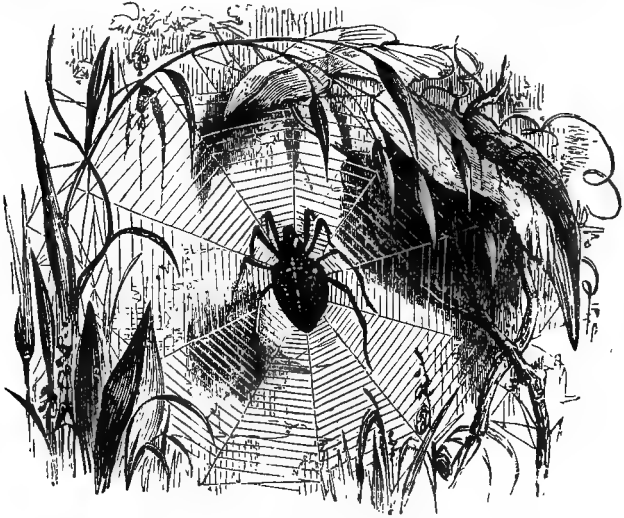
THE SPIDER.—The *arana*, or spider, is a genus of *apterous* insects. The mouth is furnished with short horny jaws; lip rounded at the apex; feelers two, curved, jointed, and sharp at the tip. The eyes are eight, rarely six; no antennæ: its feet are eight; and behind, it is furnished with teats for spinning. They fix the ends of the threads by applying these nipples to any substance, and the thread lengthens in proportion as the animal recedes from the place. They are able, by means of their claws, to reascend the threads with great ease and rapidity, much in the same manner as sailors warp up a rope.

Spiders differ much in their appearance, size, and habits. Some are smooth, and others are covered with hair. It is said that in America there is a kind more than forty times larger than those of Britain. Many spiders are exceedingly venomous. Their bite is small, is not only dangerous, but in some cases mortal. Spiders lay from five to six hundred eggs. It is astonishing the instinctive ingenuity they employ for ensnaring flies, the objects of their prey. When a fly is caught in the web, the spider, which was before concealed in ambush, in a moment rushes from its hiding-place, darts upon it, firmly fixes its claws upon it, and then sucks out all its juice, which soon terminates its life.

THE BIRD SPIDER is a native of Surinam, and was brought into notice by that indefatigable naturalist, Madame Merian. Her account of it is very short. She relates that it carries about with it a habitation, resembling the cocoon of some of the moths, and that it is armed with sharp fangs and inflicts dangerous wounds, at the same time injecting into the wound a poisonous liquid. She also tells us that it feeds principally upon ants, but that in their absence it drags little birds out of their nests, and then, as she pathetically observes, “sucks all the blood out of their poor little bodies.” Here, however, it is generally supposed that Madame Merian has been imposed upon, as is evidently the case in another

portion of her work, where she has drawn a curious insect, compounded of the head of a lantern-fly, and the body of a cicada. She seems to have had her doubts on the subject, for she takes care to say, "The Indians told me."

THE COMMON GARDEN, or GEOMETRICAL SPIDER, as it is called from the mathematical regularity of its net, is an excellent



Garden Spider.

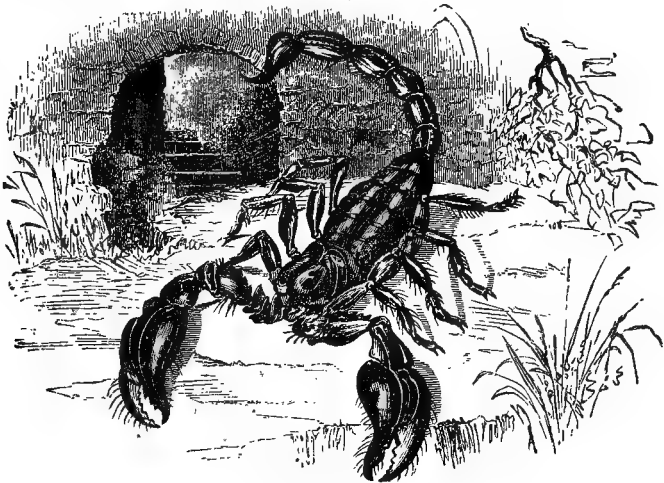
example of the Spiders. The net is formed from a gummy substance secreted in an apparatus called the spinneret, through the holes of which the gummy secretion is drawn, and becomes hard when exposed to the air. Each thread is composed of many thousand lines. When the web is completed, the Spider generally hides itself under a leaf or other convenient lurking-place, and from thence pounces upon any unwary fly that has entangled itself in the slender meshes. Should the fly be a large one, the Spider rapidly encircles it with fresh threads until it has bound its wings and legs to the body, and then breaking off the few threads that held it to the net, bears it off triumphantly to its hiding-place. Frequently, the Geometrical Spider sits in the centre of the web.

apparently enjoying the air, and if disturbed shakes the net so violently that its shape is completely obscured by the rapidity of the vibrations.

THE HOUSE SPIDER makes a thicker and irregular web, and hides itself at the bottom of a silken tunnel communicating with the web. An acquaintance of mine had so far tamed a huge house spider, that it would come and take a fly out of his hand. He states, that as it sat at the bottom of its den, its eyes gleamed like diamonds.

Several endeavors have been made to procure silk from spiders, but although a sufficient quantity has been obtained to weave gloves from, yet spiders are so pugnacious that they cannot be kept together. The eggs of the Spiders are enclosed in a silken bag, and when hatched, the young keep closely together, and when dispersed by an alarm, soon reassemble.

THE TARANTULA, whose bite was fabled to produce convulsions which could only be appeased by music, is a spider of considerable size, inhabiting the south of Europe. It lives in holes about four inches deep in the ground.



The Scorpion.

THE SCORPION. — These formidable creatures inhabit most of the hotter parts of the globe. They are quite as pugnacious as the spiders, and if several are placed in one box, they will fight until few survive, who immediately devour their fallen foes.

The maxillæ of the Scorpion are developed into large claws, like those of the lobster. With these, the Scorpion seizes its prey, and while holding it pierces it with its sting, which is situated at the extremity of its tail. The tail is composed of six joints, rendering it very flexible.

The sting of this creature is exceedingly painful, and with some persons dangerous; indeed, the sting of the large black Scorpion of Ceylon is said to cause death.

CHAPTER XVII.

DIVISION II.—INVERTEBRATES.

CLASS VI.—CRUSTACEOUS ANIMALS. CLASS VII.—MOLLUSKS.

THE CRUSTACEA have articulated limbs, antennæ and jaws, very similar to those of insects, among which they have sometimes been included; but they differ from the latter in their respiratory apparatus—breathing by means of gills, and having a regular double circulation. After passing through the gills, the blood is collected into one large vessel, which distributes it through the entire body. Returning, it is collected into another vessel situated near the back, performing in some respects the office of a ventricle, and is thence again sent to the gills.

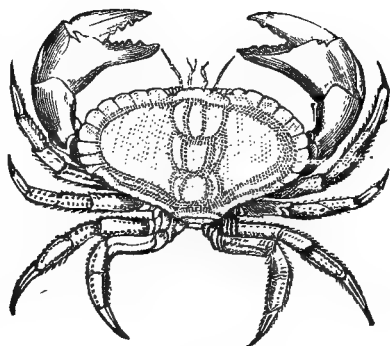
The animals of this class are enveloped in a tolerably thick, firm shell, which shelters and protects the soft parts from injury, besides serving as instruments of motion. This shell being incapable of growth, it is occasionally changed, to accommodate the increasing size of the animal; at which times the body being in a soft and defenceless state, the animal usually conceals itself until

the shell is restored, which is effected by a deposition of calcareous matter on the external membrane of the skin. They all also possess the curious power of reproducing a lost or injured limb. In the former case, a fresh limb supplies the place of that lost; and in the latter case, the animal itself shakes off the injured joint, and a new one soon takes its place. Lobsters, when alarmed, frequently throw off their claws.

In some of the Crustacea, near the lower end of the stomach, where it begins to narrow, are situated a number of teeth, or substances of a bony nature resembling teeth, usually five in number, placed upon the opposite sides of the organ. These, being moved by muscles attached to them, thoroughly grind the food passing between them, which is then discharged through an orifice into the intestines.

Ordinarily the animals of this class reside in the water, though some few are found upon the land. Upon being taken from the water, the former do not immediately die, but live for some time thereafter. Their flesh furnishes a very delicious food, but it is heavy and very difficult of digestion.

The COMMON CRAB is abundantly taken on our coasts by fishermen, who employ for its capture a wicker basket called a "creel" or crab-pot. The crab-pots are made each with an aperture which permits the animal to enter, but forbids its egress—just like a common wire mouse-trap. A piece of a fish is fastened at the bottom



Crab.

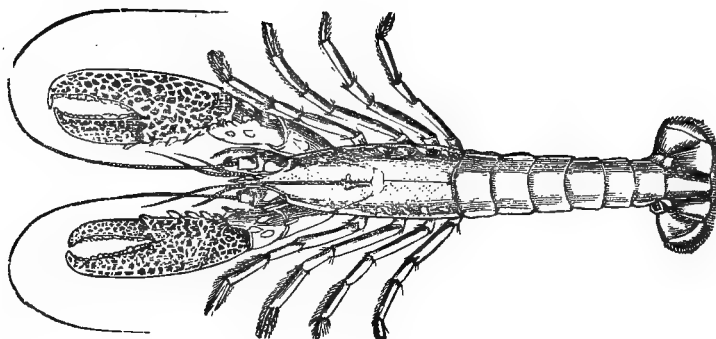
of the creel, and the whole apparatus let down to the bottom of the water, guarded by a line connected with a float, by means of which the fishermen draw it up and then remove its contents.

THE HERMIT CRAB is not so well protected as most of his relations, for his tail has no shelly armor. He is therefore forced to protect his undefended tail by putting it into an empty shell, usually that of a whelk, and then walks about, dragging his curious house after him. Sometimes, two hermit crabs wish to obtain possession of the same shell, and then there is a battle royal. When the crab grows larger, he only has to change his old shell for a new one, and it is very amusing to see them slipping their tails first into one shell and then into another, until they have pleased themselves with a good fit.

THE LAND CRABS make annual excursions to the sea in large armies. They go straight forward, and nothing except a house, or such insurmountable barrier, can stop them. Those of Jamaica are particularly celebrated.

THE RIVER CRAY-FISH is common in most of the rivers and brooks of England. It resides in holes in the bank, sometimes excavated by itself, but more often the deserted habitations of water-rats. In rocky situations it lives under and among the stones. The excellence and delicacy of its flesh causes it to be much sought after. The usual method of catching these animals is by lowering a net to the bottom of the water, baited with a piece of meat. The cray-fish soon discover this, and come in numbers to the bait, when the net is suddenly hauled up, and most of the cray-fish secured. Some, however, escape by darting off backwards, a movement produced by the violent bending of their tails. It is a favorite amusement with boys to search for them in their holes, and drag them from their concealment.

THE COMMON LOBSTER is found in great abundance on our coasts, usually in the clear rocky waters. The fishermen take great numbers of lobsters in baskets made on the same principle as those used for the capture of the crab. The powerful tail of the lobsters enables them to spring through a great distance if alarmed, and they have been seen to pass nearly thirty feet. They direct their course with wonderful accuracy, and can throw themselves through apertures hardly larger than the size of their bodies. Of course they spring tail foremost.



Lobster.

The grasp of the lobster's claw is so tight that to break off the claws is often the only method of disengaging its hold.

SHRIMPS are taken in nets swept along the sandy bottom of the sea. The chief distinction in the appearance of these two creatures is the serrated or toothed ridge which runs along the back of the head, or rather carapace. When in their natural state, they are of a brown color, and only assume the pinkish hue when boiled. Spirits of wine has the same effect.

MOLLUSKS.

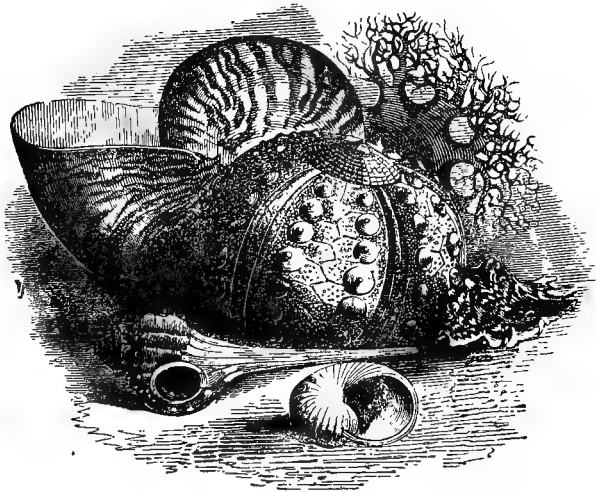
This is a large and extensive class, embracing a great variety of animals, whose structure, residence, and habits, are but obscurely and imperfectly known. Among them are the cuttle-fish, squid, oyster, clam, muscle, snail, and, in short, nearly all the testaceous animals, or shell-fish, as they are usually called, although they have no resemblance to fishes, and do not all inhabit the water. As it respects their internal structure and organization, they are undoubtedly superior to the two classes last described; but in regard to intelligence and instinct, they are, upon the whole, inferior, and are not subjects of so much interest.

The Mollusca are destitute of bones and of articulated limbs. Their bodies are generally of a soft texture, and frequently, at first sight, appear to be little else than a simple mucous

mass, without parts, and almost without organization. Their muscles are fixed into the skin, which is naked, very sensible, and constantly moistened by a fluid furnished by its pores. The contractions of these muscles produce certain obscure and indistinct motions of their whole bodies, by means of which they are enabled to swim and crawl, or even seize those objects which are adapted to their nourishment. But as no part is supported by any solid foundation, like the bones of vertebral animals, their motions are generally slow, awkward, and limited.

Their bodies are generally covered by a fold or reflection of the skin, which envelops them completely, and is called their mantle. In some species, the two folds of the mantle are united at their edges, so as to form a complete bag, in which the body of the animal is contained, opening only at one end by a sort of canal or snout: in some, it extends in two opposite directions, so as to answer the purpose of fins or oars. Sometimes there is only this simple membranous covering; but more frequently there is a hard external shell, which serves as a retreat into which the animal may withdraw itself, and which it can carry about upon its back in all its changes of place. These shells differ a good deal in shape, color, and texture, in different species; and among them are found some whose form, polish, and splendid tints, place them among the most beautiful objects in nature.

The Mollusca have no brain nor spinal marrow. Their nervous system consists merely of a number of nervous masses, distributed in different parts of their bodies, from which are sent out a great many small branches, that mutually unite with each other. The principal of these, which is sometimes called the brain, is situated round the œsophagus, and envelops it like a collar. In a few species it is contained in a cartilaginous case. Their respiration is not uniform. It is generally carried on by organs resembling the gills of fishes, which are acted upon either by fresh or salt water; but, in some cases, air is respired directly from the atmosphere. The circulation is always double; that is to say, there is a passage of the blood through the respiratory organs, distinct from that through the rest of the body. This circulation is car-



Shells.

ried on by either one or more hearts. When there is only one, it is situated so as to receive the blood from the gills, and circulate it through the body. When there are two, the second is situated so as to circulate through the gills the blood coming from the body. In some species, there are three hearts; and in this case, as there are two sets of gills, a distinct heart is devoted to each. The blood in the Mollusca is thin, of a bluish white, and always cold.

The organs of digestion vary very much. Sometimes there are organs for mastication, and sometimes not. Some species have only a single stomach, and others have several; the structure of this organ, in some species, very much resembling that of the gizzard of birds. In some species there are four stomachs, which bear a great analogy to those of the ruminating animals, and have been supposed to answer a similar purpose. In the intestines there is as great a variety.

Mollusks are divided into the Cephalous, (those which have heads), and the Acephalous, (or those which are destitute of heads). The first are subdivided into the Cephalopods, naked and

testaceous, having feet arranged in a circular manner around the heads; the Pteropods, or wing-footed mollusks; and the Gastropods, or belly-footed. The Acephalous mollusks comprise the Conchiferous, or shell-bearing, and the Tunicated, which are covered with a leathery or membranous tunic.

THE COMMON CUTTLE-FISH is an example of a naked cephalopodous mollusk. This repulsive-looking creature is common on most shores, and is, in spite of its unpleasant appearance, often used for food. Its eight long and flexible arms are covered with suckers of various sizes, enabling their owner not only to fix itself firmly to the rocks on which it dwells, but to seize and retain with the greatest tenacity any unfortunate fish or shell that may happen to come within its reach. Its powerful parrot-like beak enables it not only to devour fishes, but even to crush the shells and crustacea that are entangled in its deadly embraces. In England the Cuttle does not grow to any great size, but in the Indian Seas it is absolutely dangerous, and the crews of boats are forced to be armed with a hatchet, to cut off the arms of the cuttle-fish.

There are few who have not heard of the color called "sepia." This is, or ought to be, prepared from a black pigment, secreted by the Cuttle-fish, and used in order to escape its foes, by blackening the water with the ink, and hurrying off under shelter of the dense cloud of its own creating. Dr. Buckland actually drew a portrait of a fossil Cuttle-fish with some of its own ink that still remained in its body.

The substance sold in the shops as cuttle-fish bone is a chalky substance secreted from the mouth of the fish, and composed of an infinite number of plates, joined by myriads of little pillars.

The entire body is soft, and encased in a coarse, leather-like skin, unprotected by any shell.

THE ARGONAUT, or *Nautilus*, is an example of the Testaceous Mollusks. This curious creature, about which so many marvellous and poetical tales have been told, is very abundant in the Mediterranean.

It has been clearly proved that the *Nautilus* does *not* urge

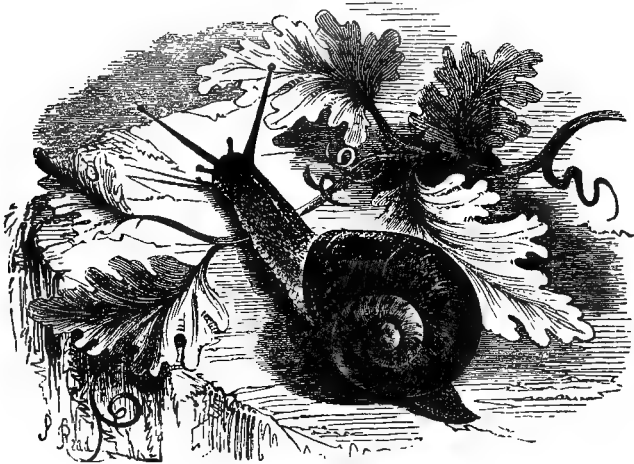
itself along the surface of the water by the expanded arms used as sails. These arms are in fact used to cover the shell, and it is from these that the beautiful shell is secreted. The Argonaut propels itself through the water by violently ejecting water from the tube with which it, as well as the cuttle-fish, is furnished for that purpose. The colors of the living animal of the Nautilus are exceedingly beautiful.

The arms of this creature are furnished with suckers. Its shell, when the creature is living, is flexible and semi-transparent.

SLUGS AND SNAILS are the terrestrial Gasteropods.

THE SLUGS are well-known invaders of our gardens, and, together with the Snail, the Caterpillar, and the mysterious "Blight," are objects of the gardener's most intense hatred. The Black Slug is usually found by hedge-banks, and in grassy meadows. It seldom ventures out by day, especially if the day be bright; but at night, when the dew is on the ground, it may be seen trailing its dark length through the herbage.

THE SNAIL.—There are several species of the Snail, among which the Edible Snail (*Helix pomatia*), the Belted Snail (*Helix*



The Snail.

nemoralis), and the common Garden Snail (*Helix aspersa*), are the most conspicuous. The Edible Snail was imported into England by the Romans, who prized them highly, and fattened them in a building erected for that express purpose, as indeed they are now in some parts of the Continent. This snail grows to a large size, nearly attaining the magnitude of an ordinary closed fist.

The eyes of the Snail are placed at the extremity of the tentacula, or "horns," as they are usually called.

The common Garden Snail is so well known that no description of it is needed. It lays eggs very large in comparison with the size of the parent; they are about the size of small peas, round, soft, and semi-transparent. They are deposited about two inches below the surface of the earth.

This creature is very tenacious of life. A living snail was exhibited, at the Ashmolean Society at Oxford, which had made a long sea voyage, packed up in cotton wool. An immersion in water soon brought the inhabitant to view, and when it was exhibited it was crawling about a box in perfect health.

THE ROYAL STAIRCASE WENTLETRAP, an example of the marine Gasteropods, is a native of the Chinese and Indian seas, and was formerly so scarce that a specimen two inches in length would sell for a hundred pounds, in England. Even now, a very fine specimen cannot be obtained under six or seven pounds. For this reason, the specific name "pretiosa" was affixed to it by Lamarck.

THE MONEY COWRY and the WHELK. — The Cowries are not less celebrated for the elegance of their form, and the beauty of their markings, than for the curious circumstance that one species is used as current coin in Guinea and Bengal, thus being employed for the same purpose by two entirely distinct races of men, situated in different quarters of the globe. Their value is of course small in proportion to gold or silver. At the present time a rupee in Bengal is worth 3200 Cowries, the value of the rupee being about 52 cents.

THE LIMPETS are spread over every latitude, except the Arctic regions. The common Limpet is to be found on every rock

and large stone at the sea-side. The variety of its attachment to the rocks is very curious, and well repays a careful examination. Every one who has seen a living limpet knows how firmly it fixes itself to the rock. This is done by the inhabitant creating a vacuum on the under surface of its body, which causes the pressure of the atmosphere to keep it so tightly fixed to the rocks, that a blade of a strong knife is required to detach it. Frequently the margin of the shell adapts itself to the shape of the substance to which it adheres, proving that it must remain fixed in the same spot for a long time, and rendering it difficult to imagine from whence it can obtain sufficient nourishment to support life.

Sometimes a large shell may be picked up covered with limpets, that adhere firmly to it in spite of the rolling of the waves, and the tossings about to which it must necessarily be subjected.

THE BIVALVES do not enjoy such powers of locomotion as the Univalves, yet some, as the fresh-water mussel, can urge themselves along by means of a fleshy organ called the foot; and so powerful in some is this organ, that by means of it the animal can not only burrow in the sand, but actually leap out of a boat. The rapid opening and shutting of the valves is used by some, as the scallop, as a means of progression. It is believed that the Bivalves have no visual organs.

THE SCALLOP is peculiar to the seas of Europe. It is a singular fact, that in the stomach of the common Scallop is found an earthy deposit, which, when boiled in nitric acid in order to dissolve the animal and other portions, exhibits under a powerful microscope animalcules precisely similar to those which, in a fossil state, form the earth on which the town of Richmond in America is built.

THE COMMON OYSTER has been for many ages considered as a delicacy for the table. In the times of the ancient Romans, we find that Oysters were exported to Rome from the coasts of Britain, and there placed in the Lucrine Lake, where they were fattened.

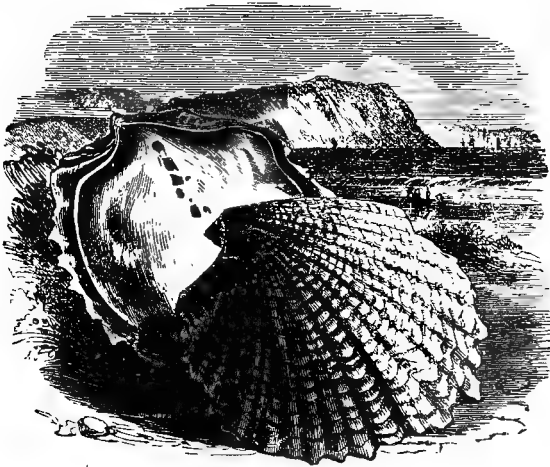
On our coasts the oysters breed in large beds. During the

months of June, July, and August, the oysters breed, and are considered unfit for food. At this time the young, called "spat," are deposited in enormous numbers. They instantly adhere to the substance among which they fall; and this, whatever it be, is called "cultch."

The oysters are taken in the proper season by the "dredge," a kind of small net fastened round an iron frame-work, which scoops up the oysters and many other marine animals.

The part of the oyster called the "beard," is in reality the respiratory apparatus.

THE PEARL OYSTER is the animal from which those highly-valued ornaments, pearls, are extracted. The pearl is nothing



Pearl Oyster.

more than "nacre," deposited in the shape of globular drops instead of being spread over the inner surface of the shell, in which case it is known as Mother-of-pearl.

These valuable shells are found both in the Old and New World. Ceylon is very famous for its pearl fisheries. The fishermen are trained to remain a long time under water, and assisted

in their descent to the bottom of the sea by a heavy weight tied to their feet. They rapidly gather all the Pearl Oysters in their way into a basket, and when in want of air, give a signal to their friends above, who draw them to the surface by a rope. The oysters are then left to putrefy for some weeks, when they are carefully washed, and the pearls extracted.

THE SEA MUSSELS are usually fixed where the tide leaves them alternately wet and dry, and it is worthy of notice that those "shell-fish" which are exposed to variations of this kind are enabled to close their shells so firmly as to prevent any evaporation. One species is extensively used as an article of food.

The river mussels occasionally produce pearls of some value. The nacre of these mussels is of a beautiful azure blue.

THE BERNICLE. — At first sight, the Bernicle bears a close resemblance to a mussel-shell fixed to a long stem. On a closer examination, however, the difference is at once apparent. The shell is in fact composed of *five* pieces, and through the aperture of the shell are thrust two rows of arms, or "cirrhi," as they are more properly called. These cirrhi serve to entangle the small crustacea or mollusks which pass near their sphere of action, and which are then carried to the mouth and speedily devoured.

The Bernicle is always found adhering to some larger object, usually floating wood, and is very common on the hulls of ships. Although the perfect animal is permanently fixed, it has been discovered that the young are free and capable of locomotion; nor is it until a week or two has passed, that they finally settle themselves.

CHAPTER XVIII.

DIVISION II.—INVERTEBRATES.

CLASS VIII.—WORMS. CLASS IX.—ZOOPHYTES.

THE term VERMES or WORMS, says Dr. Ware, in his Introduction to "Smellie's Philosophy of Natural History," has been used with great vagueness in natural history, and employed to designate animals to which the name was not appropriate. It is now, however, more restricted in its application, and is made to include only a small class of animals, which have some circumstances in common with each of the three classes last described, but still not exactly resembling any. They are sometimes called, by way of distinction, *Worms with red blood*, as they are the only invertebral animals which have red blood; and sometimes *Annelides*, from the structure of their body, which is of a cylindrical, elongated shape, divided into a great number of rings.

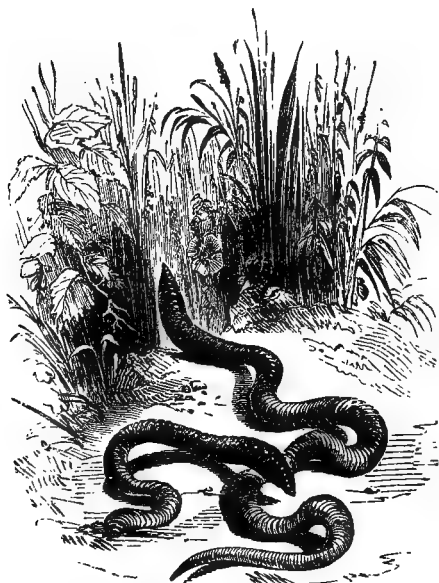
Their nervous system resembles that of the Insects and Crustacea. Their organs of sense consist merely in some fleshy tentacula, which surround the mouth, and answer the purpose of feeling and touching. In some species, certain black points appear around the head, which have been supposed to be eyes, but this is doubtful. Their blood is nearly of the color of that of the vertebral animals, but not of so bright a red. It circulates in a double system of vessels, but there is no distinct, fleshy heart to give it motion. They breathe by means of branchiæ, which are sometimes within and sometimes without their bodies. They have no limbs, but on each of the rings, of which their bodies are composed, are little bristly projections, which answer in some sort the purpose of feet. Their mouths are sometimes armed with jaws, and sometimes consist in a mere tube or sucker.

Their bodies are soft and compressible. All, except the earth-worm, inhabit the water. Many of them bury themselves

in the sand; others form themselves a sort of tube or habitation of sand, bits of dirt, gravel, or other materials; and others exude from their surfaces a calcareous matter, which produces a shell around them.

Among the animals belonging to this class are the earth-worm, the leech, and the hair-worm.

EARTH-WORMS are familiar to all. They attain sometimes to the length of a foot, and have as many as a hundred and



Earth-worms.

twenty rings, each of which is furnished with the little bristles or spines above mentioned. They emit through certain pores a slimy fluid, which lubricates their bodies, and thus gives them an easier passage through the earth, which they traverse in every direction. They feed upon roots, woody fibres, and the remains of animal and vegetable matter. They swallow earth also in considerable

quantity, but this is probably on account of the animal or vegetable matter, in a state of decomposition, which it may contain. When cut through the middle, each portion becomes a distinct individual. And in some worms nearly resembling the earth-worm, but residing in the water, the power of reproduction is nearly equal to that of the polypes.

THE LEECH has three jaws, or rather lancets, with which it pierces the skin of animals, in order to suck their blood. Its tail



The Horse-leech.

is furnished with a shallow cup or disk, by which it is able to fix itself firmly to different objects, while obtaining its nourishment in this manner; and by means of the same organ, it moves from place to place. There are several species of the Leech, of which the medicinal Leech is the most valuable, from the use made of it in local blood-letting. The Horse-leech has the same power of drawing blood, but the wounds which it makes are sometimes poisoned, and followed by bad effects.

THE GORDIUS, or HAIR-WORM, is long, shaped like a thread or hair, nearly smooth and round. It is a vulgar notion that the

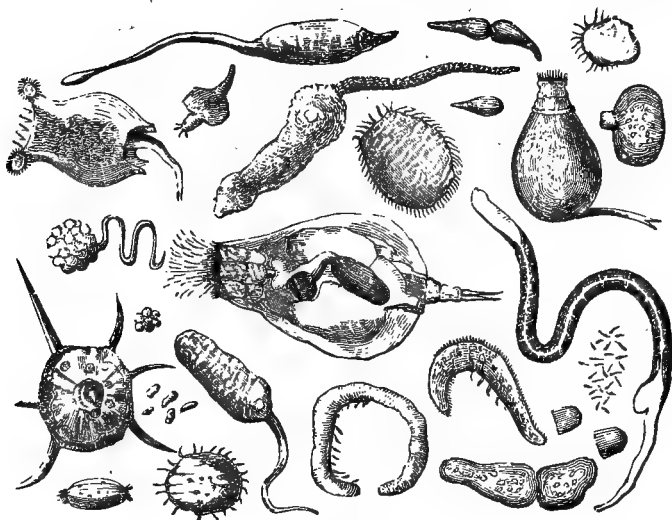
hair of the human head, or of a horse's tail, if thrown into the water, acquires life, and is converted into a worm. A species of the Hair-worm, in Africa and the Indies, is extremely noxious. It is of a pale, yellowish color, and is frequently met with among the grass, especially when covered with dew. It often insinuates itself into the naked feet or limbs of children and unwary persons, where it produces an inflammation that is sometimes fatal. Great care and attention are required in extracting it; for if it be broken during the operation, the part which remains in the flesh continues to live, and is quite as troublesome as the whole. Some naturalists consider these worms as properly belonging to the next class

ZOOPHYTES.

The class of ZOOPHYTES is the last division of the animal kingdom, and the lowest in the scale of the animated creation. It includes an immense number of individuals but obscurely and imperfectly known, and which have but few points of resemblance and connection with one another. In general they have no nervous system, no complete vascular circulation, no distinct apparatus for respiration, and no sense but that of feeling, and perhaps that of tasting. This is not true, however, without exception; for, in some instances, traces of a nervous system, of a circulation, and of respiratory organs, may be detected, as is particularly the case in the Echinodermata, the first order of Zoophytes. They are covered with a well-organized skin, and often with a sort of shell with points or spines. They have an internal cavity, in which are lodged several distinct intestines, and vessels which maintain an imperfect circulation. There are also distinct organs for respiration, and many filaments which probably perform imperfectly the functions of a nervous system. To this order belong the sea-urchin, the common star-fish, the sea-egg, etc. They are the most perfect of Zoophytes in their structure, and are endowed with a curious set of organs for the purpose of motion. Their shells are pierced with a large number of holes, regularly arranged, through which project the feet of the animal, or rather the instru-

ments answering the purpose of feet. These are little hollow cylinders, composed of a membranous substance, and ending in a kind of knob, which is also hollow. They are filled with a liquid, which is furnished to them by reservoirs situated within the body. The animal; at will, can either lengthen these cylinders and distend their extremities, by forcing this liquid into them, or exhaust it, and thus shorten and contract them. When it is exhausted, the knob or disk is drawn into a cuplike form, and thus may be firmly fixed to whatever object it is applied, like a cupping-glass; and when the liquid is again thrown into it, it is again loosened. By this arrangement, which enables it to fix and loosen, and at the same time to lengthen and shorten these organs of motion, the animal is enabled to move itself from place to place. Some of the animals of this order are composed of several branches united together in one common centre, like the spokes of a wheel; and hence they are called star-fish, or more commonly five-fingers. Their mouth is in the centre, where the several branches meet. Others are globular, and others oblong, like the sea-urchin and sea-egg.

THE INTESTINAL WORMS belong also to the class of Zoophytes. Those which inhabit the bowels of children are well known. But there is scarce any animal which is not infested by one or more kinds of them. They can exist only within the bodies of the animals to which they belong, and it is seldom that the same species infests more than one kind of animal. They have no visible organs of respiration or circulation, and those of digestion are very imperfect and indistinct. They are not confined to the intestines, but are found in other canals and passages of the body, and even in the substance of parts, as in the liver, brain, and eye. The difficulty of accounting for their existence in these parts, has given rise to the opinion of some naturalists, that they are spontaneously engendered; but it is known, with regard to many of them, that they produce eggs, and a living offspring; and it is contrary to all the analogy of nature to ascribe, in these obscure cases, to chance and the spontaneous operations of matter, the produc-



Animalcules.

tion of effects, which, in all other instances, are the result of a perfect and wonderful adaptation of organs to the end in view.

THE SEA-NETTLES, or SEA-ANEMONES, are still less perfect. Their bodies are circular, and in their centre is the mouth, which leads to several rude and imperfect cavities in the substance of the animal, answering the purposes of stomach and intestines. They are generally found attached by their base to some rock or marine substance; but this attachment is voluntary, for they can at will disengage themselves. Generally, however, they perform no other motion than that of opening and closing their mouths, and extending the tentacula with which they are surrounded. With these they grasp animals coming within their reach, such as small fish, mollusca, worms, etc. These they swallow, and after having digested their flesh, throw out their bones, shells, and other refuse matter by the same opening, which is their only one.

THE MEDUSÆ do not differ much from these, except that they are merely of a gelatinous, slimy consistence, and are never

found fixed by their base. They are common, and are often seen in immense shoals. One species of them is vulgarly known by the name of sun-fish.

THE POLYPPES have a hollow, cylindrical, or conical body, with one extremity open, which serves for their mouth, and is surrounded by a number of tentacula. The simple cavity thus formed constitutes their only organ, and performs all the functions of which they are capable. They seize their prey and convey it to their mouths with the tentacula, and, as their bodies are gelatinous and semi-transparent, the operation of digestion may be seen going on within. Many of the polypes have been celebrated on account of the fact, that when one is divided into several pieces, each piece becomes a distinct animal, perfect in all its parts. The immense beds of coral, and the different kinds of sponge, are nothing but the habitations of infinite numbers of these little animals, and are produced by their labor.

THE ANIMALCULES are animals still more minute, and are scarcely discernible except by the assistance of the microscope. Thousands of them are in this way brought to our view, of various shapes, sizes, and appearances. Most of them offer to the view merely a gelatinous mass, capable of an imperfect sort of motion. Some, however, present appearances of a structure which might give them a claim to a higher rank in the scale of beings, did not their minuteness prevent a proper examination. These animals are principally found in some animal and vegetable fluids and infusions, and hence have sometimes received the name of Infusoria.

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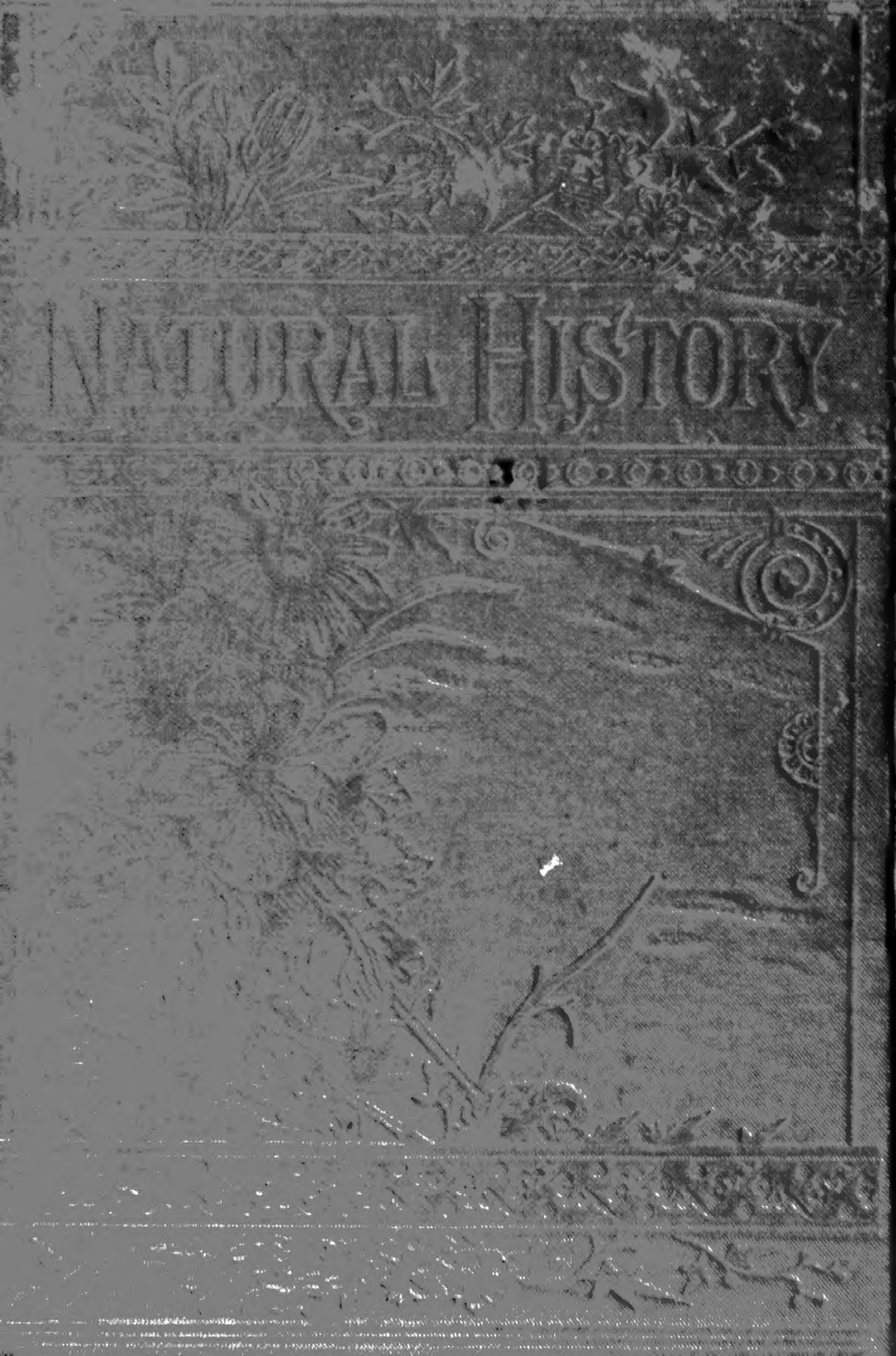
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